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*A Book on Tapestry.**

IF a previous century is to be regarded as the period notable for the publication of encyclopædias and dictionaries, the present will surely be remarkable for the immense mass of books issued to inform people about art in all its numerous ramifications. Savary and Roland de la Platière attempted to bring into the compass of half a dozen portly folios all that had to be known in regard to commerce and industries, including among the latter those which nowadays are termed art industries. *Autres temps autre mœurs*, one may indeed say, when one glances over the materials for separate lists of books on art industries, each section of which is separately dealt with in hundreds of books. The production of these, many of them copiously illustrated by means of all the new processes of chromo-lithography, photogravure, engraving, and etching is astounding. Old information, raked out from unsuspected sources, is presented in new guise, and, bit by bit, a chain of history is forged to be handed down to posterity, and so to connect it with the misty past.

Thoughts like these occur to one on turning over the leaves (upwards of 500) of M. Jules Guiffrey's "Histoire de la Tapisserie," which has just been published at Tours, printed in good clear type, with all the charm of crisp definition common to the excellent typography of Messrs. Mame et Fils. The illustrations, for the most part, consist of impressions from delicately-cut blocks made from photographs of well-known, little-known, and typical examples of tapestries. Besides these, there are some four capital coloured plates, done in chromo-lithography, of hangings preserved in the Hôtel de Cluny at Paris, in the Cathedral at Angers, and in the Mobilier National at Paris. The accompanying text in which M. Guiffrey sets forth his history, is divided into ten long chapters. The first treats of tapestry before the fourteenth century, of which, according to the special sense of the title "tapestry," there are few traces. Next our attention is concentrated upon the important influence brought to bear upon the development of the industry by the Burgundian dukes and the French kings. In chapter III. we find a brief survey of the manufactories of tapestry during the fifteenth century which arose in France and Burgundy, under which classification come Flanders and Brabant, and all that important district which includes the homes of the Van Eycks and Memling, whose characteristic drawing and colouring subjected innumerable imitators and influenced the preponderance of fifteenth-century tapestry designs. Allusion is also made to the tapestry-making centres in Italy, Spain, England, Germany, and Switzerland. From the ruin of the Arras manufactories until the abdication of Charles V., in 1555, forms another period. This is followed by one leading to the establishment of the Gobelins, Beauvais, and Aubusson factories. Then comes the decline of designs for tapestry, which occurred after the reign of Louis XIV. And the tenth chapter, in the meagre number of manufactories to which it relates, demonstrates a still further decline in the practice of the process.

The book is dedicated to the eminent artists who maintain the "glorious traditions" of the Gobelins manufacture of tapestry. For these gentlemen M. Guiffrey claims a superiority; at the same time admitting that sufficient recognition has not been paid to the fact that much fine work came from Artois and Flanders workmen long before the Gobelins factory was established. But these, in his zeal for the glory of France, he feels he has the right to claim as members of the one French family whose triumphs he sings. Thus a strong flavour running through his book is the assertion of a French monopoly in the art of tapestry making. This is certainly rather detrimental, and tends to obscure a calmer and more comprehensive survey of the circumstances which gave birth to this particular form of art industry, and somewhat needlessly makes the author appear as a prolix writer whose patriotic feelings supervene over those which one expects to direct an impartial historian, prepared, however, to make allowances for absolute statements that France alone has been the cradle of the art-industry, that she of all countries has inherited and cherished an uninterrupted practice of the art for six centuries, and that the reputation and superiority of her tapestries must be acknowledged as supreme, the reader of M. Guiffrey's History will find an abundance of information of a valuable character.

Following conventional lines, M. Guiffrey dips into periods of antiquity and glances at the important part which European relation with the East has played in the development of art in our continent, and thence proceeds to the oldest specimen of tapestry, the chief portion of which is now in the Museum at Lyons. This specimen, from the style of its pattern, probably dates from the thirteenth century. In it we have a series of repeated circular bands inclosing a group of apocalyptical beasts; the one a winged griffin with lion tail and haunches; the other, beneath it, a chimerical bull. A small fragment of the border, a repeating four-branched scroll with a mask in the centre, is in the Kensington Museum.

At this point, one looks for a description of what constitutes tapestry as distinct from other textile productions made in a frame and having a warp and a weft. But Monsieur Guiffrey never once descends to so small a matter, so that when one encounters the reference to the first *haute-lice*,—high warp or perpendicular frame,—and where it can have been used, the want of some concise explanation of this technical term is very apparent. Perpendicular and horizontal weaving-frames are to be found in use by various savage tribes, such as the modern Central African and the Mexican or Peruvian, whose degree of civilisation is lower than that of the peoples of France, England, and Germany in the thirteenth century. Weaving by this time had been brought to a high state of perfection in these countries, while for a thousand years previously the good people of Flanders had prospered as weavers. Hence the recorded use of a perpendicular frame or a horizontal frame at this period does not strike one as having much importance as directly bearing upon the origin of tapestry-making. In later times, the terms *haute-lisse* and *basse-lisse* have been appropriated to tapestry processes, but saving this appropriation the terms *haute* and *basse lisse* are equally applicable to ordinary weaving-looms, and both sorts of frames may have been contemporaneous in European employment during the thirteenth-century. Besides the weavers, of whose early history a good deal is known, a number of craftsmen known as *tapissiers* are mentioned in early records, and their name at once connects them with what would seem to be their probable productions, namely, *tapisserie*. Of the *tapissiers* there were two classes, *tapissiers sarrazinois* and *tapissiers nostrez*. The former possibly did work in the manner of the Saracens, whilst the latter did *notre*, or our work,—that is to say, a style of work in contradistinction to that of the Saracens. But it is to be observed that both classes have the same generic name of "*tapissier*." Now, the "*tapissier*" was, no doubt, the maker of those coarser fabrics which served as carpets and covers to cushions, hangings for curtains, and such like; and the appropriate method of making these articles may have been derived from the East, where carpets and rugs were long in use before French, English, or Flemings came to perceive their necessity as articles of comfortable use, or capable of rich decorative effect.

And now, looking to the actual method of making tapestries, either in a *haute-lisse*

* Histoire de la Tapisserie depuis le Moyen Age jusqu'à nos Jours. Par Jules Guiffrey. Tours: Alfred Mame et Fils, Editeurs. 1886.

or a *basse-lisse* frame, one sees that in its essential features of twisting various threads around warp threads, it closely resembles carpet-making. It is not, therefore, difficult to understand that an Oriental carpet imported into Flanders or France may have been sufficient suggestion to the dexterous weavers in inducing them to attempt an imitation of it. Instead of one carpet several probably came over; some, no doubt, with returning Crusaders, others in the ordinary way of trade, and hence imitations in method of work may have been simultaneously attemped at various places,—Rhenish towns, Flanders, Paris, and elsewhere, even London itself. A slight sketch of a theory like this might very well have engaged M. Guiffrey's facile pen, but he is somehow bent upon throwing cold water upon such commonplaces. He finds a register dating from 1294 in which records of carpets (*tapis à griffons*) are given as the property of a Count of Flanders at that time, but all he can say thereupon is in the shape of a question, "*S'agit-il de tapisseries proprement dites ou d'étoffes décorées d'un dessein réguliers?*" and this, too, when he has never given us an explanation of a *tapisserie proprement dite*.

In writing the history of an art it seems to be of the first importance that some clear outlines should be given of the particular art in regard to the process or craft as well as to the decorative effect which is aimed at in the exercise of the process. Undoubtedly the numerous illustrations in the book under discussion indicate many phases of design in its relation to tapestries. But here again one seems to want a closer and more compact suggestion of the way in which styles of design have linked themselves together, and how ideas set forth in one material have been repeated in another.

A leading feature, in the tapestries of what is usually considered the best period, is the rendering of figure subjects, expounding some religious or secular events or stories. The same character of expression is traceable in carvings, sculptures, paintings, and engravings produced at the same period. But the actual producer of the cartoons from which early tapestries of the fourteenth and fifteenth centuries are made, is rarely named. The names of the workers,—the *tapissiers*,—are of more frequent occurrence, but, beyond the antiquarian interest attaching to them, there is not much to engage useful thought in the mention, for instance, of Jehan, le tapissier de Paris (1308), of Jehan Bouilli, d'Arras, and Jehan Hucquedieu, *tapissier sarrasinois*, of rather later date. M. Guiffrey has collected a good deal of information about one Nicholas Bataille, a distinguished tapestry-maker, who appears as the undoubted maker of a suite of six tapestries figured with subjects from the Apocalypse, some of which are preserved to this day at Angers in the cathedral. His name occurs in connexion with those of many of his royal patrons, particularly Duke Louis I. of Anjou. Brother of Charles V. of France, this Burgundian duke was remarkable for his taste for the arts, and at one time Nicholas Bataille was his *valet de chambre*. It is in the relations of details like these concerning the patrons of the art, and the tapestry-makers themselves, that M. Guiffrey's book may be said to teem. Besides this, we have many references to the transference, by sale or gift, of numerous sets of hangings; as, for instance, when in 1395 three pieces are presented to the king of England by the Duke of Burgundy, and again when the "Romance of the Rose," wrought in tapestry, is given by Duke "Philippe le Hardi" to his brother the Duke de Berry.

It would be interesting to classify the subjects of these earlier tapestries. We frequently meet with episodes,—such as the "History of the King of Cyprus in search of Adventures," the "Conquest of Babylon by Alexander the Great," the "History of Charlemagne," the "History of Bertrand du Guesclin," of "Hector of Troy," of "Parceval le Gallois," —the hero of the Holy Grail,—"Miracles of Saints," Biblical incidents, "Esau and Jacob," the "Passion," "History of Judas Maccabeus," "History of the Twelve Apostles and Twelve Prophets," and hundreds of similar stories,—more or less reflecting the chivalric, warriorlike, and religious temper of the times. Such as these are produced and reproduced over and over again, but from whose pencils the original designs came there is no apparent means of discovery. One main fact asserts itself, and that is the vast output of these decorative hangings. Paris and Arras, according to Monsieur Guiffrey, appear to have been the more thriving and industrious centres. That their productions were principally transcripts, in the matter of design, from the compositions of the early Flemish School of Painters, seems also to be established. At the same time there were factories in Flanders, at Brussels, Tournai, Lille, and elsewhere, whilst at Prague, in the fourteenth century, Charles IV. set up a factory under French *tapissiers*. Of England, M. Guiffrey has little to say, excepting that she seems to have made no effort to produce tapestries in the fourteenth century. Nevertheless, in 1344, Edward III. passed an Act regulating the manufacture of tapestries, whilst in 1392 the Earl of Arundel disposed by will of the tapestry hangings in his castle, which had been recently made in London in blue, with red flowers. These instances, which point to the organisation of the industry as likely to have taken place early in the fourteenth century, are mentioned by M. de Champeaux, another more modest writer on the subject, but are quite ignored by M. Guiffrey.

From the commencement of the fifteenth century onwards the evidence of the general making of tapestry in the northern portions of Europe is supported by many records, and it would seem that, from the middle of the fifteenth century to the commencement of the sixteenth, the more stupendous and splendid tapestries were made. Of these we have excellent engravings in M. Guiffrey's book, and it is scarcely to be wondered at that in a plethora of materials he should not have made some detailed mention of the many fine tapestries extant in England. At Coventry, Hatfield House, Hampton Court, and at the South Kensington Museum he would have found some most notable specimens,—amongst them a series of great hangings illustrative of the Triumphs of Petrarch, which we noticed in April, 1884. Like other subjects, various editions of these Triumphs were put forth by the tapestry-makers of different times, and recently a set of Petrarch's Triumphs, dating at least fifty, or even a hundred, years later than those at Hampton Court, have been lent by Lady Henry Somerset, for exhibition at South Kensington.

Notwithstanding that France has probably produced many more tapestries than any other nation, it seems that the gems of the art, stately in composition, finely drawn, and rich with sumptuous harmony of colour, have emanated from Flanders, in comparison with which the worsted and silken pictures from Gobelins and Beauvais cannot be discreetly named.

With the advance in the painter's skill to depict subtle effects of aërial perspective, atmosphere, and such like, the formality and flatness of drawing and composition, which so admirably lent themselves to great surface ornament, declined; and tapestry, after the middle of the sixteenth century, became a tame competitor with the painted canvas, striving to imitate the smallest *nuances* of tone and colour, which flowed from the painter's brush, so pushing aside real regard to the appropriate use of the material. Instead of hanging freely, the later tapestries came to be strained on panels and used as flat mural decorations. The fine borderings of well-arranged clustering flowers, fruits, and leaves, were superseded by woven imitations of the great, moulded frames of pictures, and the straggling *ormoulu* of Louis XV. Examples of these occur in the latter portion of M. Guiffrey's work. We have, however, probably said sufficient to show that whilst the book may not have answered our expectations in giving us food of a technical and æsthetic kind, it nevertheless abounds with varied historical facts interesting in themselves, quite apart from their association with the intrinsic elements of the art of tapestry-making.

NOTES.

AFTER a fruitless existence, extending over eight years, the Lower Thames Valley Sewerage Board has just held its final meeting. It has, as all the world knows, failed in the object for which it was formed, viz., the designing and carrying out of a combined scheme of sewage disposal for the districts, embracing twenty parishes, of its constituent authorities. It has, moreover, spent over 40,000*l.* in the effort, and has nothing to show for the money but something under 300*l.* worth of furniture in the offices which it has occupied at Kingston. It seems generally admitted that the failure arose not from the impracticability of the object aimed at, or from any disproportionately large expenditure likely to be involved over that which would necessarily be incurred in the construction by the different composing authorities of distinct schemes, but rather from the keen and formidable opposition excited by the proposal to bring the sewage of twenty parishes to any one spot on the banks of the Thames and treat it there. The idea of this combined Board ran counter to the theory which regards sewage works, however perfect and however efficiently managed, as a necessary evil, which ought to be and can be best borne and dealt with by each parish separately. Several of the authorities of which the defunct Board was composed are already busy in the consideration of separate schemes in which large sums are about to be spent. The project of a comprehensive combined scheme for the Thames Valley, to which some eminent engineers have given a considerable amount of time and thought, seems destined to be in abeyance for some years to come. It is obvious that it would require some strong overruling power,—nothing less than a compulsory Act of Parliament, in the passing of which no account had been taken of local feeling or ideas,—to band together again these Thames Valley authorities for a purpose similar to that which the late Board attempted in vain, and at enormous cost, to carry out.

THE recent announcement that the Inventions Exhibition of last year has declared a loss, all the more serious inasmuch as it has swallowed up the savings of former exhibitions, is a pretty sure sign that these undertakings have been carried to an unreasonable extent. If true science were at the bottom of these things, any loss that resulted might well be put up with; but everybody knows that under the gilded pill lies amusement, pure and simple, and that the South Kensington Exhibitions are in reality, for the majority of those who frequent them, very little above the status of the Crystal Palace, the Albert Palace, the Aquarium, and other places of popular resort. A ten years' course of exhibitions was commenced by the late Sir Henry Cole, but it broke down ignominously at the end of the third year; and the same fate will probably overtake any extension of the system after the Colonial celebration that will be opened next May. Probably very few people would regret their discontinuance, except those who make their money out of them, and we feel sure that the shopkeeping and manufacturing community would give a unanimous vote against their resumption,—at all events, for a considerable time. The day when we could show the world that we were superior to all competition is long past and gone, and there are now many other nations who have taken a leaf out of our book, and who know well how to use it with advantage to themselves. It is doubtful, indeed, whether the Exhibition mania has brought any real and abiding profit to those who have been compelled to take part in it, and who have had for many years to pay a species of blackmail in the shape of large fees for space and carriage, besides experiencing a very decided hindrance to the steady progress of business. Viewing recent exhibitions even in the light of mere entertainments, they are seldom financial successes; and when we look around London and note the dismal plight in which these undertakings are, without exception, struggling to keep clear of bankruptcy, it must be conceded that the whole thing is very much overdone.

THE Metropolitan Board of Works, at its meeting on the 12th inst., spent about an hour in discussing the nomenclature of the new street from Piccadilly-circus to New Oxford-street, and a very amusing discussion it was. The Works and General Purposes Committee (as we stated in our last would be the case) presented a report recommending that the new line of thoroughfare be named "Shaftesbury-avenue." There were several amendments. The first one was that the name of the thoroughfare be "Ashley-street," on the more than questionable ground, adduced by the speaker, that if it were desired to commemorate the life's work of the late Lord Shaftesbury, it would be better done by the name "Ashley-street." This amendment was rejected by a very large majority. Mr. Selway (who at a previous meeting of the Board suggested the name "Piccadilly-East,"—a name as absurdly inappropriate as "Piccadilly-road," the original recommendation of the Committee) moved that the new thoroughfare be called "Dudley-street," on the ground that by the adoption of that course the old name of a part of the line of new thoroughfare would be retained; though, as was pointed out by another speaker, within living memory Dudley-street was called "Monmouth-street." This amendment, however, was negatived, as were others, one of which was that the street be called "Shaftesbury-street," thus boldly contravening the Board's By-law as to the naming of new streets. Another amendment was that the street should be called "St. Giles's-street," but this met with little support, one member saying that such a name would seriously depreciate the value of property in the street. In the course of the discussion, objection was taken to the term "avenue" by one member, because he said it could only be applied to "arborescent passages," and by another because it was American, or, as he put it, that it savoured of "Yankee Doodle." Ultimately the recommendation of the committee that the street be named "Shaftesbury-avenue" was agreed to by a large majority.

IN reference to our article last week on the discoveries at Winchester, the Dean of Winchester writes that he thinks it unlikely that the "New Minster" would have been built on the southernmost line of their territory, and that the remains laid bare are those of a Saxon church preceding the present Norman cathedral. He has just taken the dimensions, which are 157 ft. by 55 ft. There are no buttresses on the outside. The Dean is of opinion that the Palace of William the Conqueror was placed due west of the New Minster and close to the High-street; in fact, where the map in the "Annals of Winchester" places it. He adds:—

"We have not found Prior Silkstede's remains. There have been three bodies discovered,—(1) in the very centre of the Lady Chapel, a layman, his coffin without nails, tied up with beautifully plaited ropes of grass, and tarred outside (indicating, probably, removal from a distance). The body was in a winding-sheet of linen, and was entirely packed in hay, which remained perfectly sound. The hands were down by the sides, not crossed or on the breast. No jewel, ring, crozier, or other indication. It was in a place of great honour, and is a real puzzle. (2) Bishop Courtenay, in the crypt. (3) A bishop (not Prior Silkstede), who lies under a great stone, with matrix of a splendid fifteenth-century brass, of a bishop, not a prior."

AS will be seen by a paragraph in another column, the scheme for the registration of plumbers initiated by the Plumbers' Company will commence on the 1st of March. In connexion with the announcement of this fact in the daily papers, two of those journals,—the *Standard* and the *Daily Telegraph*,—have, in leading articles published this week, waxed eloquent upon the shortcomings of plumbers and the consequent discomfort of householders. Incidentally both the journals named impute part of the blame for bad plumbing to District Surveyors, but the writers seem to be quite unacquainted with the real duties of District Surveyors, which consist simply in seeing that the structural requirements of the Building Acts are carried out, in order to secure stability and to diminish the spread of fires when they break out. District Surveyors, in their official capacity, have nothing to do with the plumbing or sanitary fittings of the buildings which they are appointed to oversee. It goes without saying that in the articles referred to, architects and clerks of works are, directly or by implication, blamed for bad plumbing in the houses of the people. The writers of such articles as those mentioned are evidently unaware of the fact that with the great majority of houses architects and clerks of works have nothing whatever to do.

THE Fulham Vestry-hall competition has again remained unsettled, the Vestry having, as mentioned in another column, carried an amendment to recall Mr. Currey and ask him to give further explanation as to his award. The whole matter appears, if half the reports circulated are true, to be very discreditable to some of those concerned in it. Architects, it is said, have been writing to Vestrymen, giving their names and asking for support in a competition which is nominally conducted under motto and on impersonal grounds. Vestrymen have been "nursing" their friends among the competitors. These kind of sub-plots are, unhappily, not uncommon in connexion with architectural competitions, but they seem to have found a congenial soil at Fulham, and to have flourished exceedingly. We hope the names of those architects who have attempted to get an unfair advantage over others by divulging their names and by personal canvassing will be made known.

THE designer of a public monument is naturally desirous that his work should be placed where it may appear to the greatest advantage. It is generally supposed that the most conspicuous position is the most desirable one, but an artist will prefer a spot where the new erection will most effectively group with the surroundings. A question of this nature has arisen between the local authorities in Edinburgh and Dr. Rowand Anderson with reference to the exact spot upon which the Buccleuch Memorial is to be placed in County-square. The commonplace idea would be to erect the memorial in the centre of the square, but Dr. Anderson conceives that were it placed about 24 ft. west from the doorway of the cathedral the Memorial could then be placed facing to the west instead of the north, and would thus have the advantage of sunshine; it would also group more effectively with the cathedral, with which it assimilates in style, and would not form a harsh contrast with the Signet Library and County Buildings, which it would be apt to do were it placed in contiguity with either of them. The cathedral authorities object that if the proposed site were occupied by the memorial, the view of the great west doorway would be obstructed. This would be the case to some extent, but it might probably enhance rather than detract from the value of the doorway, which, like most Gothic features, is not most effective when viewed right in front. A similar objection was taken to the placing of the restored Market Cross at the east end of the cathedral, but it is found that, although it partially obstructs the view, the choir gains rather than loses by its proximity. Dr. Anderson was requested to prepare a perspective, showing the memorial upon the site proposed, to be submitted to a subsequent meeting.

THE death of Prince Torlonia at Rome is an incident well worth recording in any journal devoted to industrial affairs, because he represented a type of all that was most useful and necessary to a country, like United Italy, that is working its way steadily to a rapidly-improving condition of material prosperity. The Torlonias, who are now the wealthiest family in Italy, were really of French extraction, their name being Teuloron, and their birthplace Auvergne, in France. The grandfather of the Prince settled in Italy and there introduced the manufacture of needles and lace, acquiring, during a tolerably long life, a considerable fortune. The late Prince wisely determined to lay out a good portion of this in land, and eventually became the largest landed proprietor in the kingdom, being, no doubt, assisted in the matter by his having been in a position to lend money at various times to the Government, and by his having obtained the monopoly of tobacco, an income in itself. But Prince Torlonia spent his huge fortune as loyally as he made it, not only in unbounded charity, but in private and public works, on a scale such as had never before been undertaken, even with all the resources of the State. Of these the most magnificent was the drainage of the ancient Lake of Fucino, 50,000 acres in extent, a work which had been conceived by Julius Cæsar, begun by Claudius Nero, continued by Trajan and Hadrian, and again attempted by Frederick II. and Alphonso of Arragon. The present enterprise was commenced in 1854 and terminated in 1876, no less than 1,725,000*l.* having been spent in the *emissarius*, canals, roads, and plantations. Unfortunately this vast outlay does not seem to have repaid itself so far, within the ten years that have elapsed since the whole was finished.

MR. MOON'S very plain speaking at the half-yearly meeting of the London and North-Western Railway Company, on the 16th current, should be pondered by all persons interested in railways. The earnings in the last half-year of the passenger trains, he said, were the worst they had ever had. They were less, per train mile, than had ever been earned on the line, and in addition to that, a train mile in 1885 meant something very different from a train mile in 1864. For example, the limited mail train weighed 55 tons in 1864. In 1874 it weighed 75 tons. In 1884 it weighed 165 tons. The Scotch mail train weighed 256 tons, driven at express speed, and at a pace never attempted twenty years ago. Thus, the work done per train mile was prodigiously increased, and yet the earnings per train mile were less. There had been a falling-off of 80,000 first-class passengers, of 160,000 second-class passengers, and of 350,000 third-class passengers, following on a decline of 250,000 of the last in the first half of 1885. Shareholders will thus fully concur in the hope expressed by the Chairman that "they would not be required to create any more capital for a year or two." Perhaps before they consent to do that, they may even ask for a debtor and creditor account of the low-priced mineral traffic.

MANY of our readers will see with regret the announcement of the death, on the 12th inst., at St. Augustine, Florida, of Mr. Randolph Caldecott. Mr. Caldecott was of a delicate physique, with a tendency to consumption, which was counteracted from time to time by a residence in Italy and the South of France during the most rigorous months of the year. Mr. Caldecott was as delightful personally as he was in his drawings, and all who knew him will remember with regret his gentle manners, and the quaint, old-world character of his conversation, which resembled very much his drawings in its humorous simplicity and entire absence of affectation.

AN important acquisition has been made by the French nation in the shape of the monument known in Jerusalem by the name of Qbour-el-Molouk, which has been for many years the subject of keen anxiety to French antiquaries. It is believed to have been the resting-place of the kings of Judah, and, as long ago as 1851, M. de Saulcy made some excavations here, and sent to the Louvre a fine sarcophagus-lid which was said to have belonged to the tomb of David. In 1864, the same explorer proposed to M. Isaac Pereire to join him in acquiring the ruins, and this was carried out after long and troublesome negotiations. Considerable building operations have taken place since, and a large wall built round the tomb, from which several remains of great interest have been extracted. The tomb has now been offered to and accepted by the State, and an inscription is

being put up recording the circumstances and the names of the donors and those connected with the works, such as M. De Saulcy, M. Pereire, M. Patrimonio, the French Consul at Jerusalem, and M. Mauss, the architect.

THE Ἐφημέρις Ἀρχαιολογική, iii., 4, publishes a very interesting inscription, which gives back to us a sculptor of the fourth century B.C., who has hitherto been but a name. The inscription is engraved on a square block of Pentelic marble, built into a wall close to Beula's gate, in the Athenian Acropolis. The base originally supported a statue dedicated conjointly by two women, part of whose names only remains. Fortunately, beneath the dedication, the sculptor's name is complete, Πάνδιος ἐποίησε: "Pandios made it." Oddly enough, all that literature tells us of this sculptor Pandios is a note by Theophrastos, in his "Hist. Plaut.," ix., 13–4, in which he says that the sculptor Pandios went mad from eating the fruit of a plant while he was working in the sacred enclosure of Tegea. But just this mention of Tegea suggests to archæologists that this very Pandios may have been at work there with Scopas, who was employed to rebuild the temple of Athene Alea: that temple which Pausanias noted as so "large and worthy to be inspected," and of the pediment sculptures of which, from the hand of Scopas himself, we have a few melancholy fragments.

ARE those of our readers who are London ratepayers aware of the nature of the little Bill which has been introduced into Parliament by the Metropolitan Board of Works? If not, we commend it to their consideration. It simply authorises the Board to make, or to oppose, any applications to Parliament that they may think proper "with respect to the supply of water in or near the metropolis"; and to defray the cost "as expenses of the Board." Viewed from the standpoint of the solicitor or the engineer who desires large schemes and long Parliamentary struggles, nothing can be more cheering; but how as to the ratepayers? The general outcome of the policy of the Metropolitan Board of Works, whether as regards their repeated and unsuccessful attempts to introduce a water supply of their own, or as regards their sturdy resolution to continue the pollution of the Thames, has hardly been such as to incline the ratepayers to make over to the uncontrolled pleasure of this body the right to expend any sum they please in fighting as to water supply for the next twenty years. Yet this,—with no limit, indeed, as to time,—is what the Bill proposes to authorise.

WE are glad to learn that a systematic attempt is to be made, by the co-operation of the Prince of Wales and the Mayors and principal authorities of the kingdom, to assist artisans in the provinces to visit the Indian and Colonial Exhibition, with due regard to economy. The exhibition will contain so much that will be valuable and suggestive in regard to art-workmanship, that it is to be hoped that a great number of those engaged in artistic handicrafts, more especially, may be enabled to see and study it. We will print the detailed proposals in our next.

IF, after the unhappy occurrence of the death of the poor boy who was run over the other day close to the Metropolitan Railway ventilator in Queen Victoria-street, the Railway Company do not take immediate steps to lower the ventilator, at least so far as to allow the drivers of vehicles to see crossing passengers, they will incur a very heavy responsibility in view of the recurrence of such an accident, which is by no means an unlikely contingency. It may be urged, no doubt, that if passengers exercised the precaution of not crossing close to the ventilator they would be in no danger of being run over; but it is impossible to reckon on the supposition that every person crossing at the spot should always bear in mind that there may be a vehicle unseen on the other side of the erection. It is necessary for public safety in a crowded city that drivers should be able to see the roadway and passengers to see the vehicles; and the interposition in the middle of a street of a great erection which entirely blocks out drivers on one side of it from passengers on the other side is undoubtedly an element of public danger which ought to be removed without delay.

THE last number of the *Journal* of the Hellenic Society contains, with other interesting matter, an essay by the late Mr. Fergusson on "The Tomb of Porsenna," advocating the views which he had before set forth as to the probable form of this extinct monument, as consisting of a central and four angle steles on a square podium, with a *petasus* or umbrella-like canopy over the whole. Mr. Fergusson infers from analogy the former existence of a numerous class of tombs or monuments on this model, and even suggests that the Taj Mahal, with its large centre pavilion and four smaller ones, may be a survival or development of this early form.

THE Burlington Fine Arts Club have in their lower room a small but very interesting collection of engravings from the works of Turner, specially intended as illustrative of the water-colour drawings now in the Burlington House Exhibition. A good many of these are shown in two or more stages of their execution. In some cases the earlier proofs are touched upon by Turner, and one, that of Derwentwater, bears on the margin of the trial proof the direction, in Turner's writing:—"More bold work; full of stones, large and small. N.B. The bow not so advanced by rock." Occasionally we seem to see how the "Turneresque" effect of the scene developed little by little, as in the four plates of the "Chain Bridge over the Tees," where the catalogue notes, in regard to the third impression, "later trial proof, with rays of light added": that which was at first a wild mountain scene in the ordinary light of day having become in the third stage a shimmer of sunlight rays crossing the picture in a manner, on the whole, more after Turner than after Nature. In the fourth and last proof, the deep gloom of a crevice on the left of the view is lighted up by two or three birds in flight, showing white against the darkness behind.

THE exhibition of the "Nineteenth Century Art Society" in Conduit-street is rather better than some previous collections under the same title, though we still entirely fail to see the suitability of the name for an exhibition which does not contain a single work by the most eminent artists of the day, and which does not even represent any special tendency in contemporary art, beyond the exhibition of two or three "impressionist" works not of a very marked type. Miss Ruth Canton's terra-cotta mask of "Azrael" is fine. Among the exhibits may be mentioned "A Young Turk" (52), by Mr. Murray Cookesley; a fine study of Sea (76), by Mr. Shaw; "On the Derwent" (80), by Mr. E. H. Holder; portrait of the Rev. Jervis-Edwards (203), by Miss Alice Miller; "The Thames at Sutton" (386), by Mr. T. J. Soper; and a "Derbyshire Dale" (447), by Mr. F. Dixey, a fine and impressive evening study in water-colour. Miss Stacpoole's large portrait of a young lady (152) is an obvious attempt to repeat Mr. Herkomer's brilliant experiment last year in the portrait of Miss Grant, not very successfully.

SIR JOHN MILLAIS'S new picture, "Bubbles," now on view at Messrs. Arthur Tooth & Sons' Gallery, represents a little boy in a dress of green velvet, seated, and with his face turned upward, watching the rise of a large soap bubble which he has just blown. The child's head shows a light blond complexion and hair, and the flesh is painted in the artist's finest manner, but surely the head is large for the body, even making every allowance for the proportions of childhood. As a piece of colour the work is very pleasing, and it is noticeable that the attention of the child is really fixed on the object which is supposed to interest him, which is not the case in some of the artist's child-pictures, where the accessory objects seem to have been put in as afterthoughts, without reference to the expression or direction of the countenance.

THREE large pictures by Mr. Long, representing the Story of Jephthah's Vow and its consequences, are now on view at 168, New Bond-street; the first showing the daughter with her maidens; the second and largest, Jephthah meeting his daughter on his return; and the last, the body of the daughter laid out on a funeral pile. Almost as a matter of course, all the pictures are up to a certain limit well painted and composed; and there is all that can be said about them. They are what we call "family Bible pictures" on a large scale, and represent the art of respectable commonplace.

WE must enter a protest against a new form of exaction practised on architects entering into competitions, which appears to be gaining head, viz., the system of demanding a deposit of money before supplying them with the instructions to competitors. At first it began with a guinea; the Fulham Vestry demanded two guineas, and supplied wretchedly imperfect plan and instructions; and now, in the advertisement for a competition for new Municipal Buildings for Sunderland, published in this and in our last issue, is an obliging offer to communicate to architects the terms on which they may compete, on the deposit of 5*l*. Consider what this means. Not one word is said in the Sunderland advertisement about time, premiums, or any other conditions of the competition. Until the architect sees the conditions he cannot possibly tell whether they are such as he would consider fair or just, or whether it is worth while for him to go in for it at all; and to obtain this necessary information he is to deposit 5*l*., which will be forfeited unless he sends in a design. Considering the imperfect and blundering manner in which conditions of competitions are frequently drawn up, it is utterly unreasonable to invite architects to spend 5*l*. in discovering whether the competition is one which it is worth their while to go into; and we hope the members of the profession will decline to comply with the ingenuous request of the corporation to present them with so many five-pound notes on speculation.

THE UNEXHIBITED SCULPTURES IN THE BRITISH MUSEUM.

GREEK MONUMENTS, CHIEFLY SEPULCHRAL.

PROFESSOR C. T. NEWTON, C.B., delivered the first of a course of three lectures on the unexhibited sculptures in the British Museum, on Tuesday afternoon last, in the theatre of the Royal Institution, Albemarle-street. He remarked that comparatively few people were acquainted with the contents of the Blue Books and Annual Reports laid before Parliament concerning the British Museum, but those who were acquainted with them would know that the Trustees of the Museum had been continually clamouring for more space during a period of nearly fifty years. A certain portion of the required space they had at length obtained, but, he grieved to say, it was far from sufficient for the proper exhibition of the treasures of the Museum, and not nearly sufficient for the needs of the Department of Greek and Roman Antiquities, over which, until very recently, he had the honour of presiding. A portion, and a very important portion, of the sculptures of the British Museum was at the present time buried in the basement of the building, which had been aptly called the "sepulchral basement." As some of his hearers would know, he had, in times past, in other countries and under other conditions, been fortunate enough to be a discoverer; but in those days it never occurred to him that his last task in connexion with the British Museum would be to re-discover many of those sculptures which, purchased with grants of public money during the early part of the present century, had been described and engraved at the expense of the Trustees, and were known and referred to by every school of archæology in Europe,—and known far better, too, he was sorry to say, by foreign publics than by the people of this

country. It never occurred to him when he was digging up sculptures in Asia Minor that he should afterwards have to reveal their very existence to the British public by delivering these lectures. The screen was covered with a number of drawings of a particular class of sepulchral sculptures, nearly all of which, interesting as they were, were immured in the dark basement of the British Museum, unseen, uncared for, and blackening year by year by dust and the smoke-laden air of London. It was for these unhappy prisoners, waiting for a release which never came, that he confidently invited the sympathy of his audience, for he was convinced that the latter did not include any of the pretentiously ignorant people who scoffed at these remains as being unworthy of notice. It would be very difficult, within the limit of an hour's lecture, to give an adequate idea of the quantities of sculpture which were now buried in the basement of the Museum. There were, however, three main classes, viz., (1) the Greek sepulchral reliefs, mainly from the Elgin collection; (2) the Roman sepulchral reliefs, mainly from the Townley collection; and (3) a number of what might be called stray sculptures of very great interest in their several ways. In addition, the basement contained a large number of stones bearing Latin inscriptions. In the present lecture he would only deal with a comparatively small portion of the great buried collection he had thus briefly described, namely, the Greek sepulchral reliefs, reserving his notice of Roman sepulchral sculptures for his subsequent lectures. With regard, then, to the Greek sepulchral reliefs or monuments, he would say that they consisted, in a large proportion, of stelæ. It would be asked, "What is a stele?" Students of ancient history who had read their Thucydides or Grote would not need to be reminded of the noble passage of the funeral oration of Pericles over the Athenians fallen in war,—"It is not only by the record of the stelæ in their own country, but by the unwritten record in all countries that their memory is preserved. Of illustrious men all earth is the tomb." Those who did not care to turn to Thucydides might see those noble words, graven in their original Greek, on the base of the monument erected to Lord Falkland near Newbury. Now, the illustrious men whose memories were preserved to us in Greek history had no doubt their monuments, and monuments of the highest interest, at Athens. Those monuments, alas! we do not possess. But the monuments we do possess were the monuments of a number of people less distinguished in history, —of Athenian citizens, who in their several walks of life were supporters of Pericles and other great Athenian generals. Many of those monuments bore representations of the domestic life of the citizens. There were several varieties of the Greek stele. The most common was a long and narrow strip of marble, sometimes simply inscribed, but frequently sculptured. Sometimes the top of the stele was carved with the beautiful floral ornament which the Greeks called the anthemion; immediately below that came the name of the person commemorated, and on many stelæ the figure of the person was sculptured in relief, sometimes within a sunken panel. A peculiarity of the stele was its extreme narrowness in proportion to its height. Possibly that form of monument was in some degree necessitated by the law of Solon, who regulated the size of the sepulchral monuments in his time and the length of the inscriptions upon them. In some instances the stelæ were crowned by pedimental forms. Sometimes they were sculptured in the form of a vase, called a lekythos. Some of these were very elaborately sculptured, but in low relief, so that the subjects might not interfere with the outline of the "vase." Some specimens of this kind of stele were in the basement of the British Museum,—some having lost their necks and some their feet. Then there was another variety, namely, that of the heroön type, so called from their resemblance to the façades of the heroön or small temples which abounded on the mountain sides of Lycia. These, then, were the principal varieties of stelæ. But there was another form of sepulchral monument which he had not yet named, but of which there was a very important class, many examples being in the British Museum, viz., the form in which there was a relief set in an oblong frame. He now came to a very important question, viz., what was the meaning of these sculptured reliefs? Did the figures represent the dead as they were supposed to appear in another world, or as they appeared in life? Or, were some of the figures representative of the living, and others of the dead? These were questions on which a great deal had yet to be written. The Austrian Government, who took an enlightened view of the duty of a Government in the encouragement of archæology, years ago projected a great scheme for publishing the whole of the Greek sepulchral monuments, with the view of facilitating the interpretation of their meaning. On this head he referred his hearers to two interesting reports, one published in 1874 and the other in 1875, by Professor Conze, now of the Museum at Berlin, but then of the Austrian Academy. At that time the Austrian Government sent commissioners into all the countries where these Greek sepulchral monuments were known to be, as well as to Athens and in the country round about it. The Museums of London, Paris, Leyden, and Berlin, as well as private collections, were visited by the commissioners, who caused the whole of the sepulchral monuments which they found to be photographed. When the Commissioners came to London it was his (the lecturer's) duty to drag the whole of the sepulchral monuments from their hiding-place in the basement of our national museum, in order that they might be photographed. That was a work involving a considerable expenditure of time and labour, and, of course, of money. However, we might hope that the result of all that labour would be that archæologists, instead of writing papers on the subject based upon imperfect deductions from a limited number of examples, would be able to take the clear and large view of the subject which would result from a true induction from a large number of examples. The lecturer then went on to point out, by reference to the drawings exhibited on the screen, that many of the figures in relief may be assumed to depict some incident in the life of the person commemorated, or some incident typical of his calling or vocation. One of the examples of which a drawing exhibited was a relief, in which a horseman was plunging a spear into his prostrate foe. This relief, as the inscription upon it showed, was to commemorate one of the five horsemen who fell at the battle of Corinth, somewhere about 394 B.C. Another relief exhibited an Athenian youth seated on the back of a horse that was rearing, the rider being represented as gently caressing the animal to keep him quiet. Behind was a figure on foot. The inscription on this monument was metrical, the two first lines reading,—

"I many joys in youth with mates in years
Once shared. Now earth-born, earth again become."

These examples were amongst those found in the celebrated street of tombs in Athens,—the Agia Triada, discovered in 1863. Other reliefs were of a domestic character, some of them representing apparently such subjects as a lady seated and attended by her handmaiden; figures reclining at a banquet, &c. Some of these reliefs were figured in Mrs. Mitchell's able history of ancient Greek art, in which was a whole chapter devoted to the consideration of these Athenian sculptured monuments. Mrs. Mitchell's remarks on the subject were well worth reading. Many of the family groups depicted on these sculptured monuments were regarded as representing leave-takings between the living and the dead, and that was a theory which had many adherents. It was a theory to which he, the lecturer, was more or less inclined. The latest German light on the subject was contained in the large catalogue of the wonderful collection of casts which had been brought together in the Museum of Casts at Berlin. In the new edition of that catalogue, published last year, the archæologist Wolters expressed his conviction that these sculptured groups were in no instance meant to represent leave-takings between the living and the dead, but were simply representative of domestic affection among the Athenian families, and related to real life. Wolters was an archæologist whose opinion was entitled to great respect. These reliefs were of the fifth and fourth centuries B.C., and were a faint echo or reflection of the art of Pheidias and Praxiteles and their immediate followers or contemporaries. It might be asked, "Why are all the faces of these figures so monotonous and so similar in character?" That question was a very interesting one in the study of Greek art. The fact was that the Greeks were opposed to the realistic representation of public men on their monuments. Their whole theory was that the individual should be merged in the State, and that individual likenesses should be very much discouraged if not absolutely forbidden. It was this which accounted for all the faces of the figures on the frieze of the Parthenon being similar. There were people who believed that the ancient Greeks were all possessed of ideally perfect and regular features, but he (the lecturer) utterly disbelieved such a thing. He believed that there was just as much variety between the faces of man and man, and woman and woman, as there was amongst ourselves. One proof of that was to be seen in their masks, which represented an infinite variety of expression of feature,—a variety which could only have been obtained from the faces of the people. With regard to the oblong reliefs, the lecturer recommended his hearers to peruse an article by Mr. Percy Gardner, in a recent number of the *Journal of the Hellenic Society*. In conclusion, the lecturer referred to the Chæronean Lion, a cast of which, taken at the instance of the British Museum some years ago by a *formatore* sent out for the purpose, at a cost of 70*l*., was hidden in the Cimmerian darkness of the basement of the British Museum. It was quite possible for this work to be restored, and he was surprised that the Greek nation did not restore so interesting a monument of their ancestors. Finally, the lecturer referred to the destruction, by the agency of the lime-kiln, of the tomb near Bargylia, in Asia Minor, which consisted of a basement crowned, like the lion tomb at Cnidus, by a figure of Scylla, half-woman, half-dogs, of which a cast is in the British Museum. The lime-kiln had much to answer for in the destruction of ancient monuments in barbarous countries. Even in this highly-civilised country, General Wade, looking for materials to make a military road from Newcastle to Carlisle in the early part of the last century, could find nothing so convenient for the purpose as the great Roman wall, which was, up to his time, nearly perfect with all its towers and battlements.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE sixth ordinary meeting of this Institute for the present session was held at Conduit-street on Monday last, Mr. Alfred Waterhouse, R.A. (Vice-President), occupying the chair in the continued indisposition of the President.

Architects' Remuneration.

Professor Kerr asked whether the attention of the Council had been drawn to the remarks made by Baron Huddleston on the architects' commission of five per cent. His lordship was pleased to say that he considered this mode of payment objectionable, and thought the Institute of Architects should take up the matter. Baron Huddleston's opinion was entitled to peculiar attention, because, when at the Bar, he was a very successful advocate, and no one understood better the way in which a jury would look at any question of a commercial character. It seemed, however, that he had mistaken the principle on which the commission was charged to be that of payment on results. The Council might think it advisable to issue some sort of declaration on the subject, as the same remark was frequently made by persons of less importance. The schedule of charges prepared under the presidency of Sir William Tite was not understood to constitute rules laid down by the Institute. It was rather a declaration of custom arrived at after a careful investigation by persons qualified to enter into the matter. This schedule had been revised from time to time, but never altered in principle, and it still stood as a declaration of the custom of the profession from a somewhat early period. It was also a principle such as was adopted in America, France, and Germany, and no one had since suggested a better system. In some cases it was not remunerative, while in other cases it was more than remunerative, and then special conditions were made in the schedule to reduce the amount. The practical question was, whether architects, as a matter of fact, were found to be inclined in any shape or form to run up their clients' expenses for the sake of their shilling in the pound. As a public officer of twenty-five years' standing, he had come across architects and builders of all kinds and

he had found the former, as a rule, were a great deal too careful, being more troublesome to the District Surveyor than builders upon questions affecting expense. The real grievance was that architects did not stand by the schedule as regards each other, but would sometimes exercise surprising ingenuity in explaining away the schedule to the disparagement of their professional brethren. The Council might take the matter into consideration, and a carefully-prepared declaration might be issued in answer to the challenge from the Bench.

Mr. Charles Barry thought the meeting must appreciate Professor Kerr's object in bringing the matter forward, to clear the profession from anything like false aspersions. But what he had said was the most conclusive series of reasons why the Council should take no notice of the matter. As the old proverb said: "*Qui s'excuse s'accuse.*" It was well known that this pestilent heresy, which at one time was very prevalent, had considerably decreased. That it would entirely disappear was too much to hope, because there were always men who could not believe good of others.

Mr. Henry Dawson agreed that the prejudice was dying away, and the judges had invariably of late years allowed the justice and reasonableness of the five per cent. He remembered two cases before Lord Coleridge, where his lordship distinctly stated that custom was to be respected, and directed the jury to find accordingly. That being so it would be well not to take any notice of Baron Huddleston's expression of opinion.

The Chairman said that the general feeling of the meeting seemed to be that no action should be taken by the Council. The more people knew of architects the more fully would they realise that they were never prompted by a desire to augment their own fee at the expense of their clients. The subject then dropped.

The Architectural Examination.

Prof. Kerr next brought forward the matter of which he had given notice at the last meeting.* Since the system of examination had been established for the admission of Associates, fewer candidates had come forward than had been expected, and on the last occasion none had presented themselves. It was natural in such a state of things that an idea should be prevalent, that the Examination was practically a failure. Candidates who had been rejected complained that the Examination was too severe, eccentric, and complex, while even those who had passed made a similar complaint. A singular thing, which had alarmed a good many, occurred on the last occasion, when the Ashpitel Prize was refused. When they remembered Mr. Ashpitel and the object he had in view in establishing that prize, no one could suppose it would have been his wish to reserve it, to the dissatisfaction of the young men rising up in the profession. He (the Professor) was always suspicious on the refusal of any prize of the kind, and he expressed his dissatisfaction at the time. Then it was complained that the Examination papers were not published. It was the universal rule to show examinees what work they had to do, that the Examination papers of the previous year should be published; but in this case not only were the questions not published, but the publication was intentionally withheld. The programme to which the young men were referred was chargeable with great complexity, discursiveness, and exaggeration throughout.

Mr. Charles Barry rose to order. What Professor Kerr was stating was extremely interesting, but he (Mr. Barry) submitted that this was too large a matter to be discussed without notice at a non-business meeting.

Professor Kerr complained that just as he was about to open the question Mr. Barry, as usual, called him to order. (Mr. Barry, "Not as usual.") The examination extended practically over a whole week, and covered the history of architecture, mouldings, sanitary science, plans, &c., besides an oral examination on the last day, and advice to candidates was also given. The list of books was stated to contain what was absolutely to be read more or less by the examinee, and extended to 187 volumes, besides encyclopædias. Of these, forty-four volumes were in the French language, six in the German, and twenty were Italian. Any one who would go into the matter would be astounded at the range of the Examination, and would not be surprised that it should be considered a failure. The Examination ought to be a contest, not for admitting candidates, but for excluding those who were unfit. They had no right to exclude from this guild any one who was twenty-one years of age, and an architect properly so-called, while the Examination should go no further than to prove that the young man was really an architect, and not one of those youths whom they found practising in surveyors' offices. It was under these circumstances that Mr. Cates had taken a step which he ventured to think was entirely out of order, and at the same time most dangerous. Mr. Cates asked the young men to come to his place of business by appointment, to receive from him assistance and advice. Any one who knew much about academical examinations must be aware that it was contrary to rule to allow the examiners and examinees to confer privately, and no university man would listen to such a proposal for a moment. But the practical objection was this, it brought to bear upon the examination a principle of individualism and a study of the peculiar idiosyncracy of mind exhibited by the examiner. As an old academical hand, he knew the dodges resorted to by students, and he would formally ask by what authority Mr. Cates had advertised these invitations.

Mr. Robert Walker rose to a point of order. He submitted that although Professor Kerr had a right to put the question, he was hardly in order in raising the whole matter of the Architectural Examination. Referring to the Professor's letter, which appeared in the *Builder* of the 23rd ult. (p. 182), he thought there were one or two expressions in it which might be called in question, and which ought not to have been used. There had been some difficulty in starting the Examination, and a notice was put in the "Kalendar" of the Institute, that Mr. Cates would be ready to see any young men who might be in need of advice in regard to it. Therefore, while Professor Kerr was in perfect order in asking this question, he ought to have done so in a proper manner, and without writing to the *Builder* in the way he had done.

Mr. Macvicar Anderson (hon. secretary) said that so long ago as 1877 By-law 14 was enacted, whereby it was provided that in March, 1882, an Obligatory Examination should take place, the object of which was to supersede the Voluntary Examination held up to that time. In 1879 a special committee was appointed to consider the best means of carrying the by-law into effect. On May 3rd, 1880, that committee's report was adopted by the Institute, and a committee appointed later by the Council to consider the whole subject. This committee held nine meetings, and recommended that Mr. Cates should be requested to act as chairman for 1880 and 1881, which was approved by the Council. Mr. Cates had, therefore, acted as Chairman of the Board of Examiners not only in London, but in Manchester and Glasgow. They would see in the Kalendar of the present year that any student desiring special advice would be received by the Chairman of the Board of Examiners by previous appointment, who would assist him to the best of his power. Professor Kerr had objected to this course, but others were of a different opinion. Besides, Mr. Cates was not, technically speaking, an examiner, as he neither set the papers, nor marked them in London. On the other hand, it was a great advantage that students in difficulty or doubt on many questions, should be able to receive from so experienced a man advice and assistance. So strongly did the Council feel this that they had that afternoon passed the following resolution in reference to Professor Kerr's notice of motion:—

> "The Council approve the action of the London Chairman of the Board of Examiners (Mr. Arthur Cates) in having given publicity to the 'advice to architects' already approved by the Council, and published in the Kalendar of 1885-6; and cordially thank him for the action he has taken; also for the zeal, unselfishness, and ability with which he has always interested himself in the advancement of architectural education."

That was the answer to Professor Kerr's question, but he would have scantily performed his duty to one who had rendered invaluable service to the Institute, did he not take the opportunity of expressing his individual opinion. Professor Kerr had not been present at any of the examinations held by the Board under the by-law, and was therefore not in a position to speak with authority on the manner in which they were conducted. He (the speaker) had attended several, and had been struck with the wide and extensive range of knowledge displayed by Mr. Cates, and he would say deliberately that the Institute owed that gentleman a deep debt of gratitude for having conducted the examinations. Professor Kerr had inquired what had become of the Voluntary Examination, but this had been superseded, as could be seen by reference to the minutes. Considering what Mr. Cates had done for the Institute, it was cruel that any action should have been taken by a member such as that taken by Professor Kerr.

Mr. Aston Webb, as one of the recently-appointed examiners, said that in order to put the young men in the way of preparing for the Examination, various means had been proposed by the Board, and it was with that view that the advice to candidates was drawn up.

Mr. Dawson thought that in any future announcements, inserted by Mr. Cates as Chairman of the Board of Examiners, they should be distinctly stated as being "on behalf of the Board of Examiners."

The Chairman considered that the members were indebted to Professor Kerr for having elicited the valuable remarks of the Hon. Secretary. He would not add a word as to the amount of indebtedness they were under to Mr. Cates for what he had done in connexion with the Obligatory Examination. He would, however, carry away the conviction that he should send to Mr. Cates any young men in whom he had an interest, who were preparing for the Examination.

Professor Kerr said his desire was that the Examination should not be a failure.

Mr. Barry added that the figures of the Voluntary Examination in nineteen years were as follows:—Class of Distinction, 3; Class of Proficiency, 43; Preliminary, 52. In the four years from 1882 to the present time 96 had presented themselves, and 64 had passed.

Swedish Building Law.

Mr. Alexander Beazeley, M.Inst.C.E., then read a paper on "Swedish Building Law," of which the following is an abstract:—

The Building Law of Sweden was defined by a Royal Ordinance (1875), and building regulations were then framed by the municipal authorities of each town. An abstract of the ordinance in the several chapters was as follows:—The first referred to the regulations, building committee for each town, and fines for breaches of the ordinance or regulations. The second contained sixteen sections, dealing with building plots, streets, squares, quays, &c., together with the general laying-out of towns, of which authorised plans are prepared, and no new districts are allowed until the plans of them have been approved of by the Crown. The third, sections 17–28, referred to the subdivision of building plots, the maintenance of boundaries, levels, yard-spaces, building lines, sanitary ordinance, and number of stories permitted to dwelling-houses; sections 29–33 dealt with corner buildings, external painting, cellars, dwelling-rooms, churches and other buildings intended for the assemblage of large numbers of people; sections 34–36 with fireproof walls, roofing, chimneys, fireplaces, and precautions against fire; sections 37–44 included application for permission to build, duties of the building committee as to building-lines, sanitary arrangements, and surface-drainage, &c., and also referred to Government buildings. The fourth dealt with the responsibility of persons building without leave from the committee, the levying of fines, and various legal proceedings arising upon the regulations; it also related to the employment of architects, their responsibility, that of the building owner, and the duty of the provincial governors to see the ordinance and regulations duly enforced. The building regulations, based upon the ordinance, varied much in different towns, and were therefore dealt with by the speaker in a general way under the principal heads, any great diversity being noticed. The heads were:—Building Plots, Streets, Projections upon or over Streets, Yards, Foundation Walls, Height of Buildings and Thickness of Walls, Fireproof Walls, Chimneys and Fireplaces, Doors and Gateways, Windows, Floors and Ceilings, Entries and Stairs, Roofs, Gutters, &c., Concrete Buildings, Timber Buildings, Theatres, and the Inspection of Buildings. A building plot with frontage less than 49 ft. and area less than from 2,847 to 9,489 square feet was not allowed to be rebuilt upon until it had been decided whether it should be purchased by the town for improving the dimensions of other plots; plots of greate

* See *Builder*, p. 228, *ante*.

frontage were not so subject to compulsory sale. Side-walks were not to be broken into by carriage-entrances, &c., but the gutter was to be properly bridged where necessary to allow vehicles to cross the side-walk, which was to be from 5 ft. to 7 ft. 9 in. wide in streets, and 9 ft. 9 in. on squares and open public places. The minimum width of roadway must be from 17 ft. 6 in. to 23 ft. 5 in. If ground were not wholly occupied by a building, the yard-space must equal at least from one-fifth to one-third of its area. In new quarters, buildings were not to exceed 66 ft. in height, excepting churches and other public buildings. Openings in fire-proof walls were, in some Regulations, absolutely prohibited, and in all cases subject to stringent conditions. Dwelling-houses were not allowed to have Mansard roofs, roofs were to be covered only with tile, slate, metal, or other approved fire-proof material. Straw bedding to tiles was prohibited. A trap-door, sheathed with metal, must be provided in every roof, and a ladder always under it. Theatres must be situated at least 40 ft. within the boundary of their own ground on all sides; or else 10 ft. within the boundary, with fire-proof walls not less than 1 ft. 5½ in. thick, having but one opening, if necessary, at the ground-level for exit. The inspection of new buildings was to be performed by one of the Building Committee and the Town Architect. The drawings of each intended building must be examined, as also the proposed site. Inspection during the progress of building had to be made at eight stages, and notice given to the Building Committee when each stage was reached. Mr. Beazeley concluded by referring to matters appertaining to light and air.

In the discussion which followed,

Mr. Edmund Woodthorpe said that in Mr. Beazeley's long paper much useful matter had been described which might with advantage be introduced into the Metropolitan Building Act. There were many difficulties in the way of carrying out in London an Act which was already arbitrary enough. Our own Act gave many powers, but the Swedish law seemed to give more, and appeared to be a very wholesome and sensible way of dealing with buildings in a timber country. He proposed a vote of thanks to the reader of the paper.

Mr. Charles Fowler seconded the vote, and added that two of the reservations mentioned might well be adopted in this country. One was that building in a city should be required to satisfy taste, and the other was that chimneys should be reasonably ornamented. The Swedish regulations also with regard to easements seemed better than our own provisions.

Professor Kerr asked Mr. Beazeley to add to his paper what was the prevailing nature of buildings in Sweden. In that country it appeared that an old building, when excessively out of repair, had to be demolished. In England, on the other hand, property was so sacred that a man had a right to retain what he pleased on his land.

Mr. Robert Walker remarked that the paper showed that in Sweden the owner of the property must employ an architect or be responsible himself. Unfortunately in London if the district surveyor could not catch the builder, and the property fell under the mortgagee or the owner, there was no remedy except against the builder.

The vote of thanks having been put and carried,

Mr. Beazeley, in replying to Professor Kerr, said that the materials generally used in Sweden were brick and stone, and for fuller information he would refer to a paper read by him nearly three years ago, on domestic buildings in Southern Sweden.* In remote districts nothing but timber was used. Repairs which amounted to rebuilding or reconstruction were never done upon old buildings, which were not in accordance with the building regulations, but only such small repairs were done as were necessary to keep them in habitable condition for the time being. In general, the greatest care was exercised in the building regulations, and only those who had studied them well could see how at every turn they guarded against the danger of fire, which seemed to be the great dread of the Swedish towns. The convenience of the private owner had to give way in Sweden to the general benefit and convenience of the whole population.

* See *Builder*, April 28, 1883, p. 583.

NEW HOUSES AND FLATS AT KENSINGTON.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

THE second Saturday afternoon visit for the present session of the Architectural Association to buildings in progress was made last Saturday, by the kind permission of the architects, Messrs. George & Peto, and Messrs. Peto Bros., the builders, to the houses in course of erection in Collingham-gardens. There were four houses visited, each in different stages of progress, from one which was just ready for the roof (one principal being fixed) to the last house which was finished fit for occupation. The houses are being built with thin Acton red bricks, with Doulton white terra-cotta dressings, the roofs being covered with Ashton & Green's green Westmoreland slates, which are graduated in size from the eaves to the ridge. The houses, which are of interesting and quaint design, decidedly Flemish in character, were carefully studied by the members. The plan of each varies, a feature in all the houses being made of the entrance-hall, which is approached by a lobby from the front door, the staircase being placed in an adjoining space slightly screened off the hall; a very picturesque treatment is obtained by this means. The reception-rooms are so arranged as to have ingle nooks or large recesses, with mullioned windows breaking the straight line of the walls. The rich detail of the wooden panelling, staircases, mantelpieces, and ceilings was especially noted. All the reception-rooms have high wooden panels, some in wainscot and some painted. The mantelpieces are principally carved oak; in one of the entrance-halls the mantel-piece is of Ham Hill stone. One of the houses contained a very interesting ceiling executed in selenitic plaster, carved *in situ*, the plaster being put up about a yard at a time, the pattern being transferred to the plaster and carved before the plaster set. Most of the other ceilings are elaborately panelled. Some of the hall ceilings are of wood. All the windows have clear glass lead-light glazing, the casements being hung to wooden frames set inside the terra-cotta mullion. The buildings form a pleasant relief to the regulation pattern stucco fronts which abound in the immediate neighbourhood.

The members passed from Collingham-gardens to the blocks of flats being built from the designs of Messrs. Flockhart & Wallace, in the Earlsfield-road. Mr. Wallace met the party and conducted them over the buildings. The buildings are arranged so that two complete flats occupy each floor, approached by an ample staircase of Wilkes's Eureka concrete, which is placed in a recess open and carried up to the roofs. The flats consist of two reception-rooms, five bedrooms, kitchen, bath-room, stores, &c., with separate coal and wine cellars in the basement for each flat, and box-rooms in the roofs. The kitchens have communication with a lift for delivery of stores, and a dust-shoot, and are arranged with good entrance-halls and well-lighted passages. The rooms average 16 ft. square; each flat has a fireproof floor. There seems to be a good demand for this class of building in the neighbourhood of Kensington, all the flats in the finished blocks being let and occupied.

SEWER VENTILATION.

SIR,—In the abstract of the report of the Committee of the Metropolitan Board of Works on sewer ventilation, which appears in your issue of the 13th inst., it is stated, with reference to the use of charcoal in the sewers of Croydon, that it had been tried and finally abandoned in consequence "of the difficulty of keeping the charcoal dry, and therefore efficient."

I wish to point out that, in the course of my experience, I have largely used charcoal for sewer ventilation, and was the inventor of the spiral arrangement which has been extensively used in the application of charcoal for deodorising the air escaping from sewers. In the case of Croydon, where for ten years I was in charge of the works, and for four years subsequently was a member of the Urban Sanitary Authority, there is not one particle of evidence to show that charcoal ever impeded the ventilation.*

* On reference to our article, it will be seen that we expressly stated our own conviction that the spiral tray arrangement would not impede ventilation.—ED.

The charcoal was removed from the sewers upon the joint recommendation of the Medical Officer of Health and the Surveyor, in a report presented to the Croydon Local Board in February, 1876, on the utility of charcoal in sewer ventilators, when they stated with regard to the ventilators that "the best consist of circular spiral wire trays, on which the charcoal is placed and kept fairly dry at all times. In the others, the charcoal is laid upon flat wire trays, placed zig-zag in the ventilators, and in most of these the charcoal gets saturated with the wet off the roads, and is rendered useless for the purpose for which it is intended. In the parish there are 245 of the spiral ventilators, and 460 of the others." Then they recommend that the charcoal should be removed, as, in their opinion, the ventilation would be improved thereby, and they went on to state that "an offensive ventilator indicates an imperfect sewer, and the true remedy is to alter the condition of the sewer, and not to seek to render its emanations harmless by charcoal." I may mention that at this period, beyond the large number of ventilators upon the public sewers,—the number in the report representing one to every 200 yards of sewers,—every house in the district had one or more ventilating pipes communicating with the house-drain; the latter communicated with the sewer without the intervention of a trap, so that the house-drain ventilators served also the purpose of ventilators for the public sewers, the total number of openings for ventilation by this means being equal to one opening in every 12 yards of sewer.

Since the removal of the charcoal from the ventilators in Croydon, thousands of pounds have been expended in improving the sewers, providing flushing arrangements, and enormous quantities of disinfectants are regularly applied in these open ventilators, so that when there are not stinks arising from decomposing matter, the nose reminds one of their presence by the powerful odour of the disinfectants. Neither has the removal of the charcoal from the ventilators in Croydon been attended with any success from a sanitary point of view. There have been more complaints of the nuisance arising from the unprotected ventilators in any one week since the removal of the charcoal, than there were in the whole of the ten years while the charcoal was in full use in the sewers. The vital statistics of the year 1873, when charcoal was in full use in the sewers of Croydon, are far more favourable than those of the year 1885. It should be observed that in the case of Croydon a great alteration has been made in the system by the interposition of a trap between the sewer and the house-drain, which, when supplied with a proper air-opening, is no doubt an enormous sanitary advantage and security to the inhabitants of the house; but it cannot be overlooked that the trapping of these house-drains, in the case of Croydon, has greatly diminished the amount of previous ventilation, which seems to have been overlooked by the Sanitary Authority, as no adequate provision has been made in substitution of the large amount of ventilation which has been stopped so far as the public sewars are concerned.

I may add that I have no interest whatever in advocating the use of charcoal, as the ventilators which I invented are open to any person to manufacture or use, but I can safely say that I have found charcoal most efficacious in preventing noxious effluvia escaping from open ventilators. It appears, however, that the Local Government Board have set their face against the use of it, and have, in more than one instance which has come under my notice, recommended its removal from the ventilators; but after a trial of the absence of the charcoal the authorities have been only too glad to again revert to its use, without any evil consequences, but with the greatest possible advantage in preventing the escape of noisome air. I do not wish to be understood to say that charcoal will meet all the difficulties of sewer ventilation, or that it is the only mode by which air escaping from sewers can be dealt with, as with the advance of scientific knowledge there cannot be the slightest difficulty in effectually dealing with the question of the ventilation of sewers if the money is forthcoming for the purpose; but in many small districts which cannot afford a large expenditure of money, the use of charcoal is simple and efficacious.

BALDWIN LATHAM,
M. Inst. C.E., F.G.S., &c.

"THE PRACTICAL SURVEY OF WORKS IN PROGRESS."

ARCHITECTURAL ASSOCIATION.

The ninth ordinary meeting of the present session was held at Conduit-street on the 12th instant, Mr. C. R. Pink (President) in the chair.

The following new members were elected:—Messrs. A. B. Clement, Horace L. Field, Edward Boehmer, Arthur E. Bartlett, George Bridge, Charles H. Daniel, T. A. Allen, Alfred A. Webbe, Robert Reid, E. C. Thomas, and Arthur E. Vickers.

A vote of thanks was accorded to Mr. Alfred Newman for kindly permitting the members to visit his forges.

Mr. Herbert D. Appleton then read a paper on "The Practical Survey of Works in Progress." At the outset he spoke of the responsibility which the architect ought to feel in being the sole arbitrator between the builder and employer as to the correct carrying out of the specification and drawings. If he were asked for a motto, he would suggest one based on the well-known advertisement, "If you ask for Somebody's Starch see that you get it," for architects were, perhaps, too often in the habit of asking for "the best" of everything in their specifications; but did they always, when the works were being executed, see that their clients always got it? Although most contracts stipulated that the contractor was to be responsible for the proper setting-out of all work, the architect should take the earliest opportunity of checking the setting-out, as no work which had been pulled about and adapted was so sound as that which had been correctly carried out from the start. After arranging with the builder as to what parts of the site might be used for the storage of materials, and the disposition of any temporary workshops or sheds that might be necessary (taking care, if the ground sloped, to have the water for the builder's use laid on to a point below the building, so that in the not unusual event of waste of water through the tap being left running the water would not soak into the foundations), the next point to be dealt with was the important one of the foundations. Of course, the greatest amount of care should be exercised in settling whether the best foundation possible had been obtained. In judging this, experience was everything, and every opportunity should be taken of gaining this experience by noting every section that was made,—such as when main sewers are laid through towns, for instance, or on the occasion of any other excavation, a careful note being made of the various strata exposed. It would be of great service if it were possible, by paying a small fee, to see a record of the sections made by the various boards of works in forming their sewers. As had often been said, the streets of London formed a most valuable school of practical experience in building if architects only availed themselves of the opportunities which the constant rebuilding and alterations afforded. During the dry weather last summer great damage was done to the houses on the southern side of London built on the clay, owing to the serious settlements caused by shrinkage. The question as to the depth that foundations in the clay should be carried was a very difficult one, and in his (Mr. Appleton's) opinion, in most instances of buildings on the clay the foundations were not carried deep enough. It would be interesting to note the depth to which the surface-cracks that appeared each year penetrated, and whether there was any movement in the clay below those cracks. It had been suggested that when clay overlied gravel there was a constant washing of the clay into the gravel through such cracks, and that the landslips that could be seen, for instance, in the neighbourhood of One Tree-hill, Sydenham (where tons of clay fell every year), were caused in that way, the accumulation of *débris* at the foot of the hill not being enough to account for the mass of clay that had fallen. In clay districts it was usual to allow concrete to be made of burned ballast, but the advisability of this was very doubtful, the clay-ballast being so uncertain in character, some of it going back to clay after a few years had passed. The precaution of cooling cement before using it should always be adopted. The next step in the building was the brickwork. The selection of the bricks was often a difficult task. Autumn and spring made bricks were said to be better than bricks made in the summer, as the latter, being dried more quickly before being burned, were liable to flake. If the facing-bricks were of different quality to the other bricks care should be taken to get bricks to match the facing-bricks as nearly as possible in size, so that the work might settle evenly. Care should be taken to see that the heading bricks used for facing were tailed in, and not snapped. In building hollow walling, it was very difficult to make the bricklayers work with a lath, to keep the cavity clean, and the utility of the hollow space was often destroyed by the quantity of mortar that was allowed to drop which, collecting on the iron ties, conducted the wet and thus destroyed the value of the hollow space. In very few cases that he (Mr. Appleton) had noticed was any care taken to preserve the iron ties from rusting. What would be the strength of hollow walls some fifty years old when the ties were rusted through it was difficult to imagine: perhaps the two parts of the wall would continue to hang together for old association's sake even then. As a rule, red bricks were very porous, and in certain parts of the walls it was difficult to keep the damp from spreading. For that reason it was always advisable to put a damp course in the chimney just where the chimney came through the roof. This should always be formed of slate in cement. In all the cases of chimney-stacks blown down by the wind that he (Mr. Appleton) had noticed, the failure had always been where some change in the material occurred, such as a stone band or string-course, and that was a point to be borne in mind in designing chimney-stacks. Parapets to party-walls of red bricks should always have a hard stone coping to prevent wet soaking down. There was another point that should always be looked closely to in brickwork, viz., to see the walling kept well flushed up. Grouting was apt to make the facing in a mess, but it was a capital method for making solid work. It was very essential to keep the work going up equally all round, so as to prevent unequal settlement and cracks. This was difficult to do when there was stonework or other materials to be built in; but these should be ready as wanted. The effect of frost on brickwork in progress should be borne in mind, and the work should be stopped in frosty weather. If the sun was bright during the day and the frost sharp at night more damage was done than when the weather was more uniformly cold. The coke-breeze concrete blocks and lintels, which were much better than the wooden lintels, wood-bricks, &c., should be made under cover during very cold weather, as the frost greatly affected them. In cleaning down the walls when the scaffolds were struck the facing should never be scrubbed with a brick,—a very favourite method with the bricklayer. It would be very useful if a simple formula could be devised for enabling architects to readily test the chemical composition of mortar. In regard to the stonework of a building, the principal points to be looked after were the bedding of the stone on the natural quarry-bed, and the working of the bedding-joints so as to make the stones bed perfectly level. In bedding stones the cement should not be brought to the face, but a thin strip of stone-dust mortar should be put on the edge, to prevent the cement staining the stone with efflorescence. In bedding stone piers the beds should always be worked perfectly level. Some masons, to produce a fine joint, would work the bed slightly hollow, the general result being that the stone flushes,—*i.e.*, it splits off at the edges. For piers Mr. Appleton preferred lead all over. Some architects used strips of lead and fine mortar, but he could not help thinking that a mistake, and he thought a great fault in modern stonework was the attempt to produce a fine joint. In fixing wooden principals on stone corbels or shafts, the wood should not be dowelled to the stone, for the constant vibration of the roof had a tendency to crack the stone, and he had known two instances of corbels falling from that cause. The timber in a building was always a difficult thing for a young architect to judge. A very useful manual, called "The Timber-Merchant and Builder's Vade-Mecum" gives the timber marks. The principal source of trouble was, of course, shrinkage. That was a thing which it was almost impossible to guard against, and on that account he (Mr. Appleton) always tried to use as few wooden partitions as possible, and in the construction of these he looked carefully to the way in which they were braced. They should, whenever possible, cross the joists; if they ran parallel, they should rest on bridging in preference to bearing on a single joist. There was a notion that partitions were well able to carry themselves and a floor or two besides. If that was the intention of the designer of the building the partitions should always be detailed, and not left to the builder to truss. Iron was taking the place of wood for wall-plates, the joists being notched on the iron plate, and, no doubt, forming a capital tie to the walls. As soon as the roofs were covered the drains should be put in. Cement joints should always be made, and the pipes bedded on concrete. The fall should be even throughout, except just in front of the syphon, where the fall should be increased. The architect himself should always check the fall of the drain, and take nothing for granted. The minimum fall for house-drains was 1 in. in 10 ft. The quality of the drain-pipes should be looked to, the London-made goods being the best. In plastering, the best plan was to run all the lime. Bad plaster-work was one of the most unfortunate things with which a house could be afflicted, especially for the ceiling-work. There seemed to be an idea amongst some that the sand for plastering need not be so clean as that used for mortar; but that was a great mistake. It was also essential that there should be no salt in the sand. Plastering should be carefully watched, to see that the work was not made too thick; ¾ in. was the usual maximum thickness allowed. The plastering should be carried down to the floor behind skirtings, as it would stop vermin. The joinery-work being always prepared at workshops, it was necessary to visit these, to see the work being prepared. When the doors were roughed out they should never be stacked against a wall, as it rendered them liable to wind. In most specifications all the joinery is described as "yellow deal"; but pine panels stood best, and were therefore most to be commended, except where the work was required to be stained. The plumbing and hot-water service should be set out on a detail drawing. This would be a useful drawing for reference if anything went wrong. In sanitary plumbing he always preferred to have a plumber who could be trusted, and he thought that this work should always appear in a separate trade from that of the constructive plumbing. As a general principle it was best for the pipes to be arranged with the idea that it might happen that at some future time they would want looking at. The pipe-casings might appear rather obtrusive, but they saved a great deal of damage if anything had to be got at. Hot-water services required careful arranging. He preferred the circulating cistern fixed below in preference to placing it in the roof; but it would be as well to see that the cistern was clean before the manhole was fastened down, for he had heard of an instance where a family suffered from lead poisoning through the plumber fastening the manhole down with a quantity of red lead in the cistern; of course it was the last place that was thought of, and it cost 120*l.* to discover. Gas-pipes should never be fixed between stud partitions, as very serious accidents had happened from the space in stud partitions getting full of gas and exploding. In glazing, the quality of the glass should be checked. Plate-glass edges should be blacked and the glass sprigged. Lead light glazing was rarely water-tight, and required well supporting with bars. In making-up the grounds and laying-out the garden the architect (if he had the direction of this work) should take care to carry the land drains with a good fall from the house; these drains should not be connected with the rain-water system without passing an inspection-box, as they frequently became choked with roots, and through these pipes the roots got into the glazed drains. Having thus noted a few of the points that occurred in surveying a building in progress, Mr. Appleton said the point he wanted to raise for discussion was:—"What was the best way of obtaining experience in judging materials and workmanship?" That was knowledge which could not be obtained from books or in an office, and could only be picked up on the works. The question of the number of times a building should be visited must, of course, depend on the nature of the work, but, as a rule, the visits ought to be sufficiently numerous that no part of the work was covered up without its having been seen by the architect, and, after each visit, a note should be made of the progress of the work up to the date of the

survey, the number of workmen employed, the value of the work done, and of any alteration made. The latter should also be noted on the office drawings if they involved a change of plan or elevation, and on the specification if they involved questions of material. The report should also note any detail drawings that should be prepared to keep the work going in proper sequence, and should include a reference to the time remaining for completion up to the date fixed in the contract. If any allowance should be made on account of the weather, that also should be noted in the report. In some concluding remarks Mr. Appleton referred to the great value of the Saturday afternoon visits of the Association to works in progress, and urged the value of the practice of committing to writing a description of what was seen, and gave some useful hints for the keeping of a "common-place book," and for the writing of specifications. As to the latter he urged exactness and fulness. "Do not," he said, "be afraid of making the specification too detailed; a little trouble at the beginning saves a world of anxiety at the end. Mean what you say, and know what you mean and want."

The Chairman, in opening the discussion, referred to Mr. Appleton's paper as one of the many valuable benefits the members had received from him, and when he remembered their hon. secretary's multifarious duties, he could scarcely conceive how the time could be spared for the preparation of such a paper. Dealing with visits to buildings in progress, there were, of course, the students' visit and the architects' business visit. For the student he would emphasise the advice that he should observe everything, noting or sketching every detail possible, and conferring with the master workman on all occasions. There were many phrases in specifications which were not clearly understood by young architects, and he would, therefore, advise the student to take the first opportunity of finding out what they really meant. Turning to the architects' business visit, it was essentially necessary that sometimes no notice should be given of the time. Then, as soon as he got on the works, he should mount the scaffolding; and, thirdly, when he had made up his mind on any point on which a difference of opinion existed, he should not then further argue the matter. The number of visits must vary with the class of work, but they should certainly be made at the commencement of each important stage of the building operations; while it was important that each class of material should be examined before being used. Dealing with the materials, the testing of cement and lime was a difficult matter, but it was an important point that they should be as fine as possible. To avoid mortar blowing it should be seen that the lime had been slaked a day before use, and that the labourer did not leave unslaked lime scattered about. As to timber, his experience was that what was imported got worse and worse every year. Timber with dart shakes should be rejected, but sometimes a mistake might be made about timber being sappy by looking only at the dark colour of the outside wood. It was important to keep the deals and timber out of the sun. Spotty timber was nearly always bad, and might produce dry-rot. He knew an instance where within four months of the erection of a building, the whole joinery was destroyed to a height of 4 ft. from the ground-floor. Not all knots were bad; but dead knots were very bad indeed. In putting timbers into a building, hardly one would be found without a camber, and in putting in joists or beams it was important that the timber should camber upwards. Projecting work should be protected; this was often disregarded, the labourer coming afterwards, scraping plinths and strings, and breaking and destroying the surfaces. With regard to bedding stone columns, he knew an architect who had iron rings made the exact diameter of the column. A soft mortar bed was spread within the ring, which was 1½ in. wide by ¼ in. thick; the ring was then taken off, the stone laid, and the joints afterwards filled in.

Mr. S. F. Clarkson proposed a vote of thanks to Mr. Appleton. There was a stage, he considered, in setting out work where checking was injurious. As to the foundations, trial-holes seemed a most rational arrangement, because sites were sometimes hollow, and walls had to be carried down to a great depth. The question of intercepting land-water was a difficult one, and occasionally required some ingenuity. As to hollow walls, he agreed with what had been said about iron ties; there was no reason why a piece of wrought iron galvanised should not last a couple of generations. The best way to clean out the core was boldly to leave openings about 18 in. wide, at intervals.

Mr. J. A. Gotch seconded the vote of thanks, adding that the paper was of so encyclopædic a character that, by the time it had reached the plumber, he had forgotten what had been said about the builder. Hollow walls, he agreed, conveyed sound, and that sometimes of an unpleasant description, and if Mr. Appleton had told them of some cure, he would have merited their deepest gratitude. At the same time they should avoid putting a hollow wall between two adjacent houses, and if they had done so the best course to pursue was to fill up the hollow with dry sand. As to joints, he knew many stone-built houses in Northamptonshire where one had to look closely to see the joints. Returning to the question of hollow walls, he was somewhat sceptical as to the amount of moisture which went down.

Mr. Cole A. Adams said that the paper reminded him of the charming book entitled "Round the World in Sixty Days," covering as it did so much ground in so short a time. In regard to hollow walls, in the South of England he had found the 9 in. part put inside instead of outside. He did not believe there was that great objection with regard to transmission of sound which had been referred to; though hollow partitions between the rooms were sometimes disastrous. To prevent the sound coming through, the plaster should be carried down to the floor, thus preventing sound, draughts, and vermin, and also the spread of fire. Partitions to be sound-proof should on the quartering have a fillet nailed, and on this should be rendered a coat of plaster.

Mr. C. H. Brodie could not agree that the thin part of the wall should be outside, especially in such a climate as ours, where heavy rains were followed by severe frosts.

The Chairman here remarked that the Ecclesiastical Commissioners would not allow the 4½ in. part of the wall to be put outside.

Mr. Brodie thought that tie-bricks were better than iron-ties, but it was important to see that the workmen put them in properly. As to flues, he believed a 9 in. by 9 in. was quite big enough. Every pupil, before finishing his time, should serve a certain period on a building, and he knew an office where this was done, with the happiest results.

Mr. Clark thought Mr. Appleton had not touched sufficiently on the importance of seeing that the damp-course was effective. Two courses of asphalte should be laid on as the walls were being built. For window-sills he had used a large quantity of teak, which cost about the same as oak.

The vote of thanks was then passed by acclamation.

Mr. Appleton replied, and added that he was rather in favour of a 14 in. by 9 in. flue, corresponding as it did with the flue linings.

COMPETITIONS.

Birmingham Law Courts.—According to the *Birmingham Gazette*, at a meeting of the General Purposes Committee of the Town Council, held on Monday last, a report was presented from the Assize Courts Sub-Committee, embodying a report from Mr. Waterhouse, R.A., the consulting architect, with reference to the above competition. The following are the numbers and mottoes of the sketch-plans selected by Mr. Waterhouse, and approved by the sub-committee for the second competition:—14, "Two Judges of Assize." 86, "Law and Order" (Design A). 88, "Via Una." 103, "Terra-cotta." 121, "Sincerity" (Elevation No. 2). The report of the sub-committee was approved, and the authors of the selected plans—whose *incognita* will be preserved—will be requested to send in finished drawings on or before the 1st of June next. The sketch-plans of the unsuccessful competitors will be immediately returned to them.——At the meeting of the Birmingham Town Council on Tuesday, Mr. Brinsley asked the Mayor if it was possible that all the plans for the proposed new Assize Courts sent in for competition could be exhibited. He thought if such a course could be adopted it would please the townsfolk. The Mayor said it had been found inconsistent with that fairness which they wished to show towards all the competitors to exhibit the plans because the competition was not a final one; it was only an interim competition, and it would not be fair to give the competitors an opportunity of inspecting each other's work.

Birmingham Workhouse Infirmary Competition.—Mr. Victor Scruton, secretary of the Birmingham Architectural Association, writes, in reference to this competition,—"The following notes may be of interest to intending competitors:—1. No professional adjudicator or referee has been appointed. 2. A local architect, who has already done a great deal of work for the Guardians, was appointed to prepare block plans for the proposed buildings, and to arrange other preliminaries in connexion with the competition for which he has been paid the sum of 300*l*. 3. The gentleman referred to in Clause 2 would have been appointed architect for the buildings, but for the casting vote of the chairman, and it may be presumed he will be a competitor."

Fulham Vestry-hall.—Mr. Henry Currey, the advising architect in this matter, some time ago made his award, after examination of the sixty-four designs sent in. His award was:—First, "Light and Air"; second, "Beta"; third, "Montgomery." As we have altready stated, the committee having charge of the matter disagreed with this award, and at length, after much delay, last week submitted a report recommending that the premiums should be allotted to the authors of the following plans:—First premium, "Clavius"; second premium, "Truth"; third premium, "Beta." On the matter coming up for discussion Mr. Davey moved a reference back to the Committee, and that Mr. Currey be asked for an explanation as to the inclusion, in his selection of plans, of one which could not be erected on the site. Mr. Dyer, in seconding the motion, mentioned that he had been at variance with the Committee, and, together with Mr. McIllroy, had declined to vote. Mr. Currey had stated that none of the plans could be carried out for the sum stipulated, 20,000*l*. If modificatious were to be made, it ought to be done all round. While they were quarrelling Mr. Currey should have been called in to advise the committee. Other plans were not considered because the authors had no friends. Ultimately the matter was referred back to the committee, and Mr. Currey was requested to attend the meeting and give an explanation.

Reform Club, Heaton Chapel.—Twelve sets of designs have been received in a limited competition for a Reform Club at Heaton Chapel, near Manchester. The selected design is the work of Messrs. Darbyshire & Smith, architects, Manchester. The cost is estimated at 2,725*l*.

"*Croydon Street Improvements.*"—In reference to a paragraph under this heading in our last (p. 289), we have to mention that the first prize was awarded to Mr. J. M. Brydon, F.R.I.B.A., of Cambridge-place, Regent's Park, N.W., and not to Mr. J. M. Beydon, as was stated, owing to a misprint.

St. Clare Estate, Walmer.—A scheme for the laying out of this estate, by Mr. W. Pope, of London, has been selected in public competition out of fifty-three competitors. The estate is now being developed for residential purposes. Its situation is said to be a very good one, being elevated, well timbered, and picturesque in character, and commanding uninterrupted views of the Downs, the Glen, Walmer Castle, and neighbourhood, and within a few minutes' walk of the sea. It is to the enterprise of Messrs. W. & T. Denne, the owners, of Walmer, that the first portion is now under development.

OBITUARY.

Mr. James Green.—The *Manchester Courier* reports the death of Mr. James Green, architect, Todmorden, which took place on the 10th inst. Mr. Green was sixty-four years of age. He was the architect of the Accrington Town-hall and other public buildings.

Mr. Shakspere Wood, an English sculptor long resident in Rome, died a few days ago.

Mr. William Lee.—The death is announced of Mr. Wm. Lee, who a few years ago carried on an extensive business as a builder in Bristol, and who leaves behind him in various parts of the city many evidences of his skill and enterprise. He was fifty-nine years of age.

DRAWINGS FOR THE ROYAL ACADEMY.

As before, we shall be glad to photograph in advance architectural drawings which are intended for the Royal Academy Exhibition of this year, with a view to their being illustrated in our pages during the continuance of the Exhibition; and we will, if desired, forward such drawings direct to the Academy from the office of this journal, but we cannot be responsible for procuring them and returning them at the close of the exhibition.

It must be understood that we can only accept for this purpose drawings of a high class, and such as have a reasonable prospect of acceptance at the Academy.

Illustrations.

LIVERPOOL CATHEDRAL COMPETITION.

DESIGN BY MR. W. EMERSON.

WE give this week the west elevation of Mr. Emerson's design for the Liverpool Cathedral, on the fine and original quality of which we have already commented in previous numbers.

DECORATIVE DESIGN: "PEACE AND PLENTY."

THIS illustration is reproduced from the drawing by Mr. R. A. Bell, which obtained for its author the prize for decorative design at the last Royal Academy students' competition. The original drawing, which was one of the most attractive things in the last exhibition of students' work at the Academy, was purchased by Mr. E. Pfeiffer, of Mayfield, Putney.

WAREHOUSE, MANCHESTER.

THIS illustration, from the architects' drawing, represents a warehouse which was built not long since in Manchester, from the designs of Mr. Muirhead and Mr. Wallis Baldwin. The materials are brick and terra-cotta.

SCHOOLS AT CLAYGATE FOR THE THAMES DITTON SCHOOL BOARD.

THESE schools, which were won in open competition, give accommodation for 300 children,—110 boys, 110 girls, and 80 infants. They are built in local red bricks and covered with "permanent green slates," the two residences in the centre having half-timbered gables. The boys' and girls' school-rooms are each 45 ft. by 20 ft., and each has a class-room of 34 ft. by 20 ft. The rooms are plastered to the collar, and are 12 ft. 6 in high to the plate, and 18 ft. 6 in. in centre of room. Each school has separate entrance, with hat and cloak lobby, and lavatory with Stidder's tip-up basins. There is a covered playground in the rear and offices fitted with Moule's earth-closets, with passage at back and dry earth store. The whole of the school-rooms, class-rooms, and lavatories have a dado of white glazed bricks, 4 ft. high, and are paved with Parmenter's patent pitch-pine blocks, laid herring-bonewise on a bed of concrete. The playgrounds are an acre in extent, and have been levelled and gravelled on burned ballast and clinkers. The schools are enclosed on two sides by a 6 ft. cleft-oak pale fence, and on the front and side by dwarf walls and iron railing.

The whole of the works have been most satisfactorily carried out by Mr. Piller, of Teddington, under the superintendence of the architect, Mr. Richard J. Lovell.

DETAILS FROM STAPLES INN.

THESE details, which have been measured expressly for us, form an interesting example of the elegant and piquant variations on Classic types to be found in English Renaissance work.

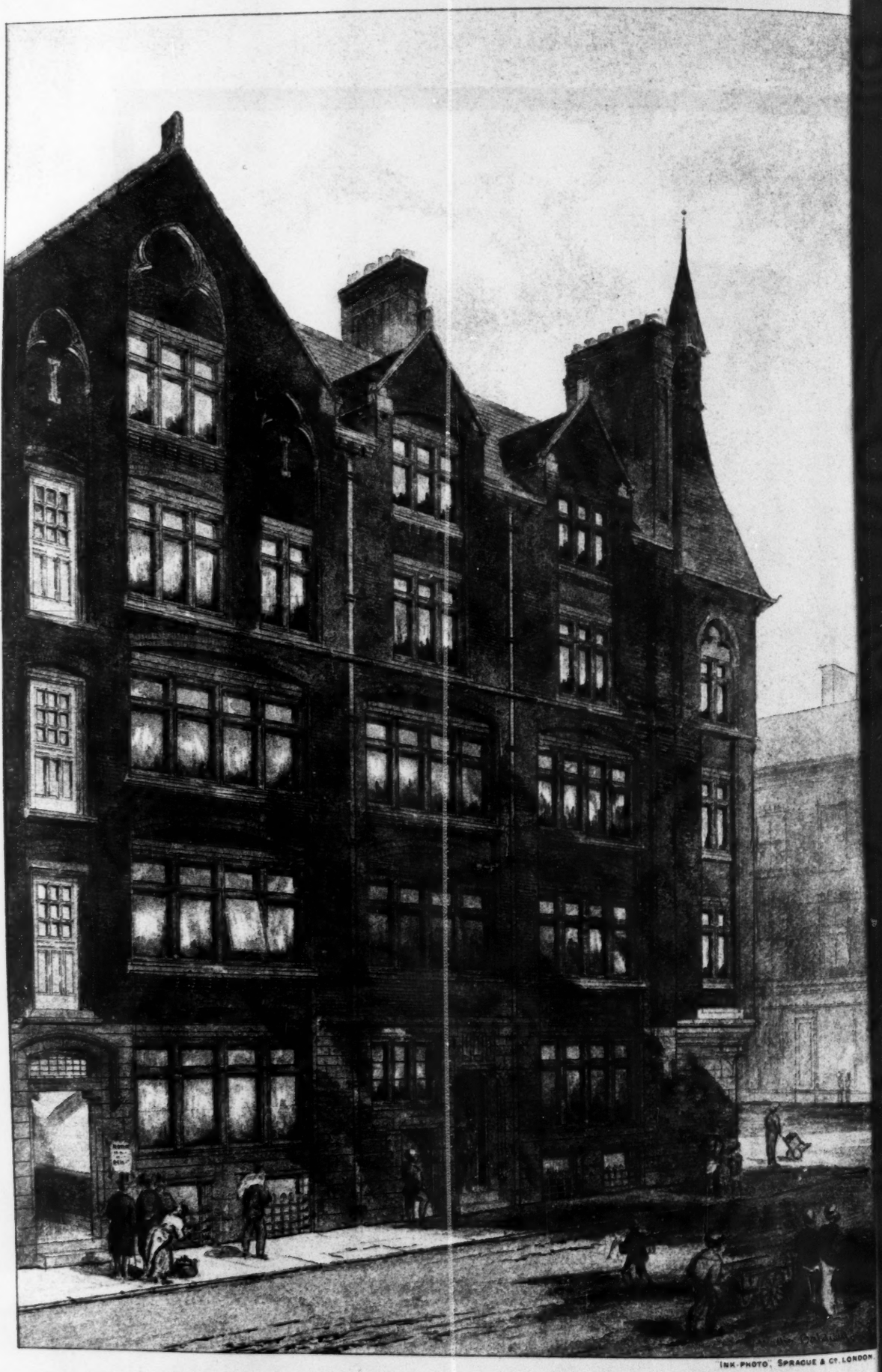
Liverpool Cathedral Illustrations.—Just before the rising of the Court, on the 18th inst., Mr. Hadley, Counsel on behalf of the proprietors of this journal, applied *ex parte* for an interim injunction to restrain the printers and publishers of the *Building News* from publishing copies of these designs taken from plates published by us. Mr. Justice Kay gave leave to serve notice of motion for injunction with copy of the writ in the action.

FREE LECTURES TO ARTISANS AT CARPENTERS' HALL.

TIMBER: ITS GROWTH, SEASONING, AND PREPARATION FOR USE.

THE first of the present series of free lectures was delivered on Wednesday evening, by Mr. Thomas Blashill, F.R.I.B.A., who chose as his subject, "Timber: its Growth, Seasoning, and Preparation for use." Mr. John Foot, a member of the Court of the Company, occupied the chair, and the attendance was very large.

The lecturer commenced by describing the growth of endogenous and exogenous trees, their bark, wood, and pith. For work of importance, timber should be taken from the heart-wood of a sound tree. The grain should be close and straight, and it should be free from large or dead knots or blemishes. Some of the chief defects found in logs were cup-shakes, star-shakes, and heart-shakes. If the latter were merely found straight across the butt, and running up the log in a perfectly straight direction, they did no great harm. The tendency of the trunks to twist was very curious, and most trees were subject to it more or less. The Spanish chestnut twisted so violently that by the time it was seventy years old it was badly torn by shakes, and decayed at the heart. The best ages at which trees could be felled were, for oak, 100 to 200 years; Scotch pine and Norway spruce, 70 to 100; larch, ash, and elm, 50 to 100; and poplar, 30 to 50. Winter was the most favourable season for felling, as the tree was then most free from sap. Oak was usually felled in the early spring,—the worst season, because the bark, which was valuable, was then full of sap. Teak was barked three years before being felled, and it shrunk less than any wood in ordinary use, though it was said that this method rendered the wood of teak more brittle. Seasoning was the gradual drying of the whole log, so that the shrinkage of the outer part should not be so rapid as to cause it to split and tear open before the interior had time to part with its moisture. If timber had to be seasoned without artificial help it should be stored over a dry surface, free from vegetation, well-packed off the ground, with free access of air, but not exposed to much wind. When squared it should be stood under cover to give shelter from rain, sun, and wind. So treated, oak would require as many months as the side of the log measured in inches, while fir would take half that time. The timber should then be cut into plank or large scantlings, and be still further exposed to the air, being so stacked that it could not warp or twist. When cut to the sizes in which it was required to be used it was again stacked till fully seasoned. Finally it should be brought into a dry, warm room or shop till fit for joiner's work. After being wrought it must stand in the shop for a few weeks, until it assumed the average condition of dryness permanently maintained by wood in our moist climate, and might then be finished off. If a round or square piece of wood had to be thoroughly dried it was best to bore a hole through the heart that the air might have access to the interior and make it keep pace with the outside, so that the shrinkage should be nearly equal all through. The length of time occupied by this natural process of drying, with the consequent expense, has induced many inventors to propose drying by artificial means. The most ancient method was that of drying in the smoke of wood fires. Besides drying it more rapidly than by the gentle warmth of a room, the bitter deposit from the smoke was supposed to protect wood from insects. There was an old patent,—that of Langton,—by which the sap was extracted from the green timber in a vacuum cylinder under heat, but the length of time and cost prevented its use. Other systems of the application of considerable heat, with the condensation of the extracted moisture, were subject to the grave defect of causing irregular shrinkage, with splitting of the wood; and though the cracks thus made closed again to a great extent, the mischief done to wood intended for many important uses was incurable. For the use of the carpenter, it was unfortunate that balk timber and deals seldom got any seasoning beyond the time requisite to convey them from the forest to the building, and during their stay in the docks. Such timber, if closed up from the air, near to moist walls or new pugging, would quickly develop dry rot even in the upper floors of a house. Deals should have a year or two of open-air seasoning, being stacked with spaces between them, and afterwards gradually dried as required for use in the joiner's shop. Dry wainscot from Riga and Odessa was cut into thicknesses and stocked for three, four, or five years, being placed on end, as the sap was supposed to run down more easily. Planks were stacked horizontally with space between them. Such woods as mahogany, black walnut, ash, birch, and maple were treated similarly, but for a shorter time. In all cases the ends of timber required protection from sun and wind, as they dried more rapidly than the other parts. The old method was to keep timber in water for a fortnight after being felled. A good deal of the sap was thus dried, and it became more durable, but not so strong. Steeping it for a longer time injured it, particularly if floating, and only partly covered by water. Boiling and steaming timber was almost abandoned, the effect being to wash out the sap, as in steeping. A fresh plan of steaming had lately been introduced, and was considered by some to be efficient. There were many purposes for which the strength of wood was of less consequence than dryness, or at least permanence of the same degree of dryness. The sap had also been extracted by the air-pump, but this plan did not seem to have been much practised. The ordinary means of drying were by keeping up heat in a drying-room, and generally by the use of waste steam from machinery. When wood was cut up into small scantlings, the drying could be hastened in this way, but the further the heat was raised beyond that of an ordinary room, the greater was the risk of irregular drying and over-drying. There was a new process for seasoning boards by means of dry cold air, which was passed through a furnace, cooled, and then made to circulate through the piles of wood, so that in a few hours the boards were dry. One or other of these processes would probably be found so far satisfactory as to be useful for a great variety of purposes. The best makers of cabinet work and musical instruments were exceedingly shy of artificial seasoning. The woods used by organ builders, such as mahogany, black walnut, birch, red, yellow, and white deals, were stacked under cover, and carefully packed for the free access of air. Hard woods required from two to four years, and soft woods from one to two years of this seasoning, after being cut to sizes. Even the workshop must not be too warm, for as organs were generally placed in buildings not uniformly warmed, there was more danger that the wood would swell than shrink after the work was done. The common sense of the question of seasoning was sufficiently obvious. Wood must not be dried so quickly that it would be made unsound by cracks; and it must not be dried so much as to absorb fresh moisture and swell, when exposed to the atmosphere in which it would permanently remain. It was not merely a question of time, but rather of judgment, the object being to see that the timber was gradually reduced in scantling as it dried, and so treated as to temperature and stacking as neither to split nor get out of shape. Two important points should here be considered. Except Holland, no European country was so subject to damp as these islands, while even in Holland the weather was not so changeable. In no country, too, was timber used with such needless disregard of the ordinary precautions for seasoning. One might travel over the Continent without seeing a door divided vertically by a muntin, which was an English peculiarity. The panels of Continental doors were, therefore, more than twice the width of ours, yet he had hardly ever seen one that had shrunk in the least degree, which he attributed to careful selection and seasoning, more than to skilful framing. In seasoning, oak appeared to lose from something less than one-fifth to more than one-fourth of its weight, while other woods varied still more. Teak and pitch-pine lost very little. Paints or other appliances that would close up the pores must on no account be put on wood insufficiently seasoned, though when dry they might be serviceable by preventing the absorption of moisture. If the wood was full of sap decay would take place much quicker when painted than if left uncovered. One of the most important questions, especially with regard to the soft woods, was the prevention of decay. It was desirable, if possible, to give to the sap wood of all trees the durability natural to the heart wood. In elm and a few other



INK-PHOTO, SPRAGUE & Cº. LONDON.

A WAREHOUSE IN CANNON STREET, MANCHESTER.—MESSRS. MUIRHEAD AND BALDWIN, ARCHITECTS.

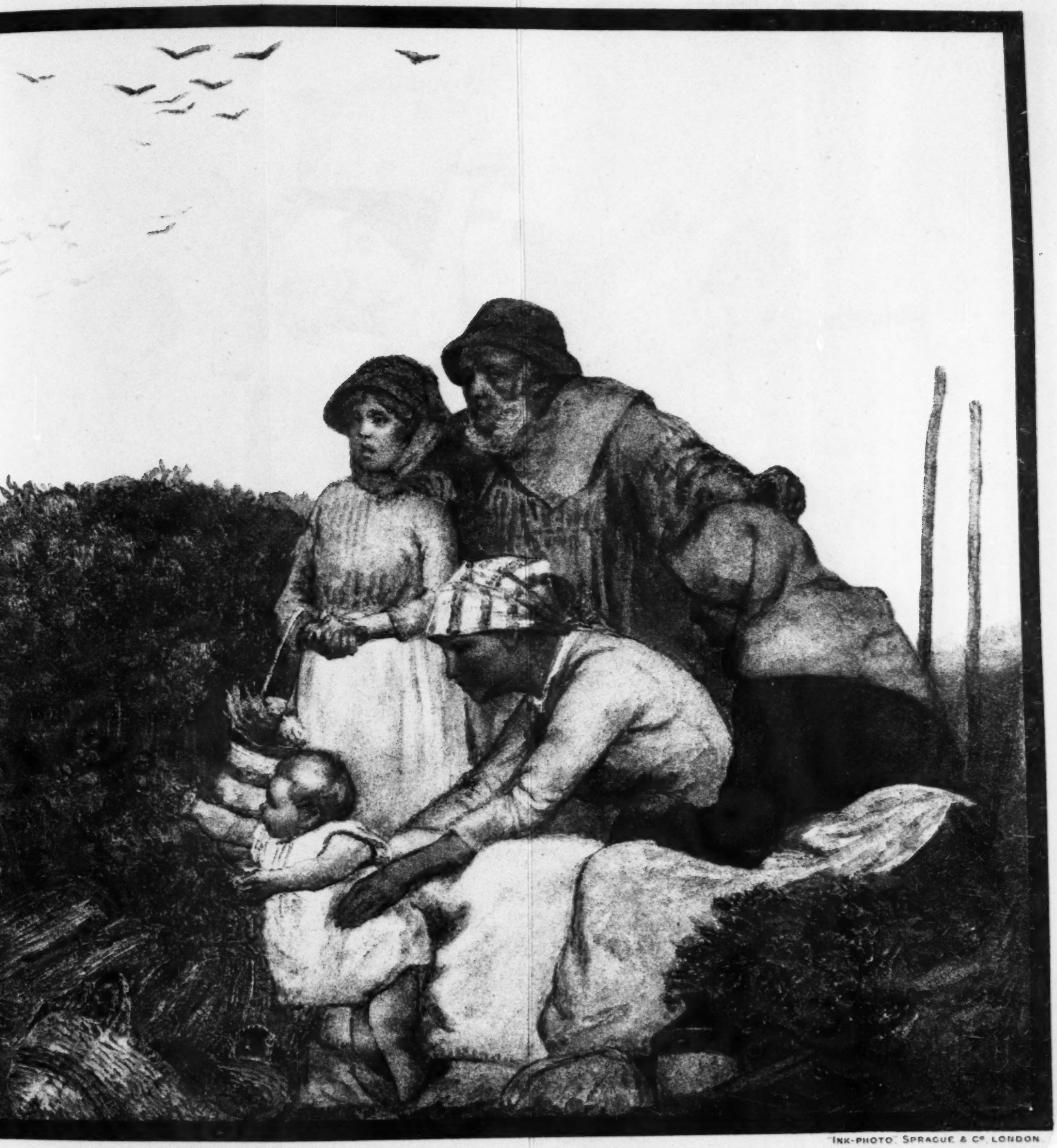
"INK-PHOTO" SPRAGUE & Co. LONDON

ND PLENTY." — DECORAT

"PEACE AND PLENTY." — I

— Decorative Design by Mr. R. A. Bell.—Awarded the Prize, Royal Academy Students' Competition, 1885.

"PEACE AND PLENTY." — Decorative Design by Mr. R. A. Bell.—Awarded the Prize, Royal Academy Studen

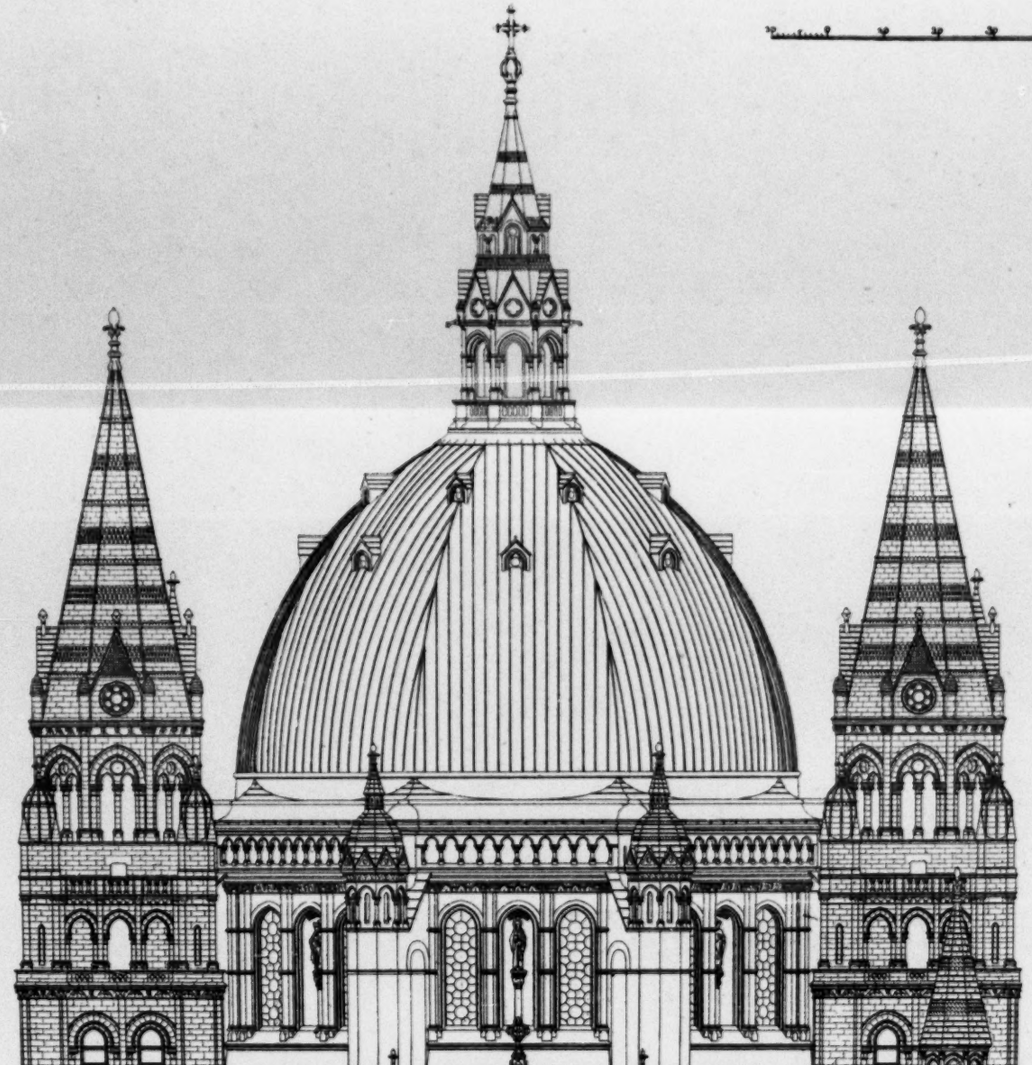


INK-PHOTO. SPRAGUE & Co. LONDON

UDENTS' COMPETITION, 1885.

DESIGN FOR PROPOSED CATHEDRAL
LIVERPOOL.

SCALE



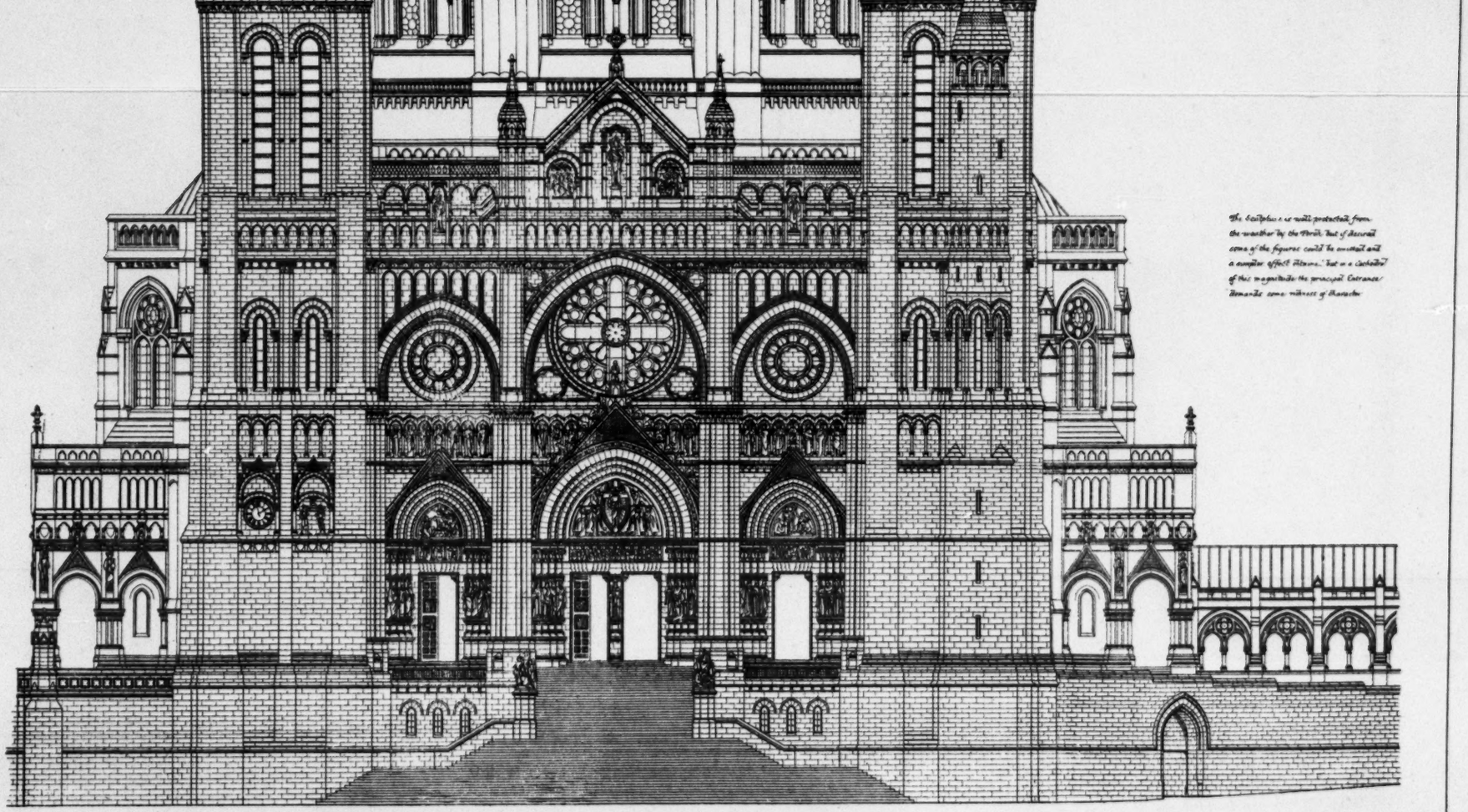
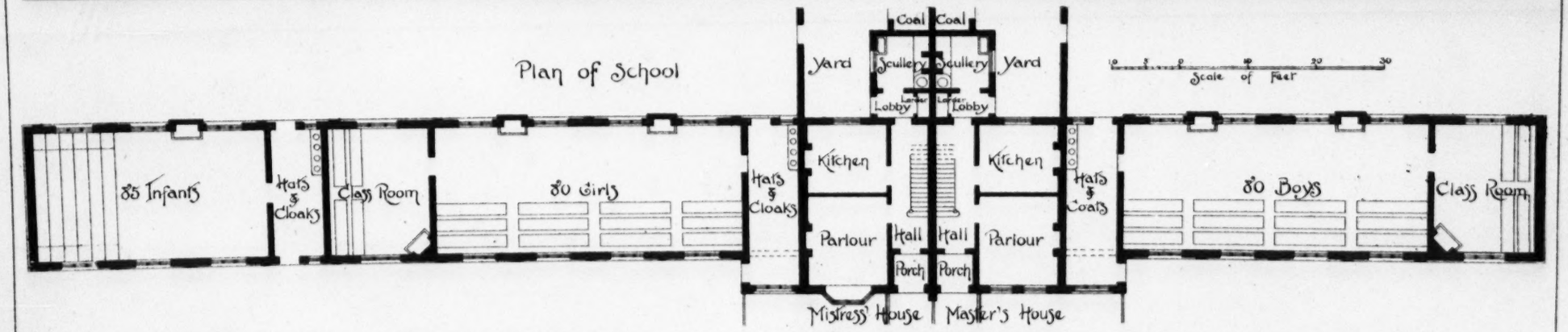


PHOTO-LITHO. SPRAGUE & Co LONDON

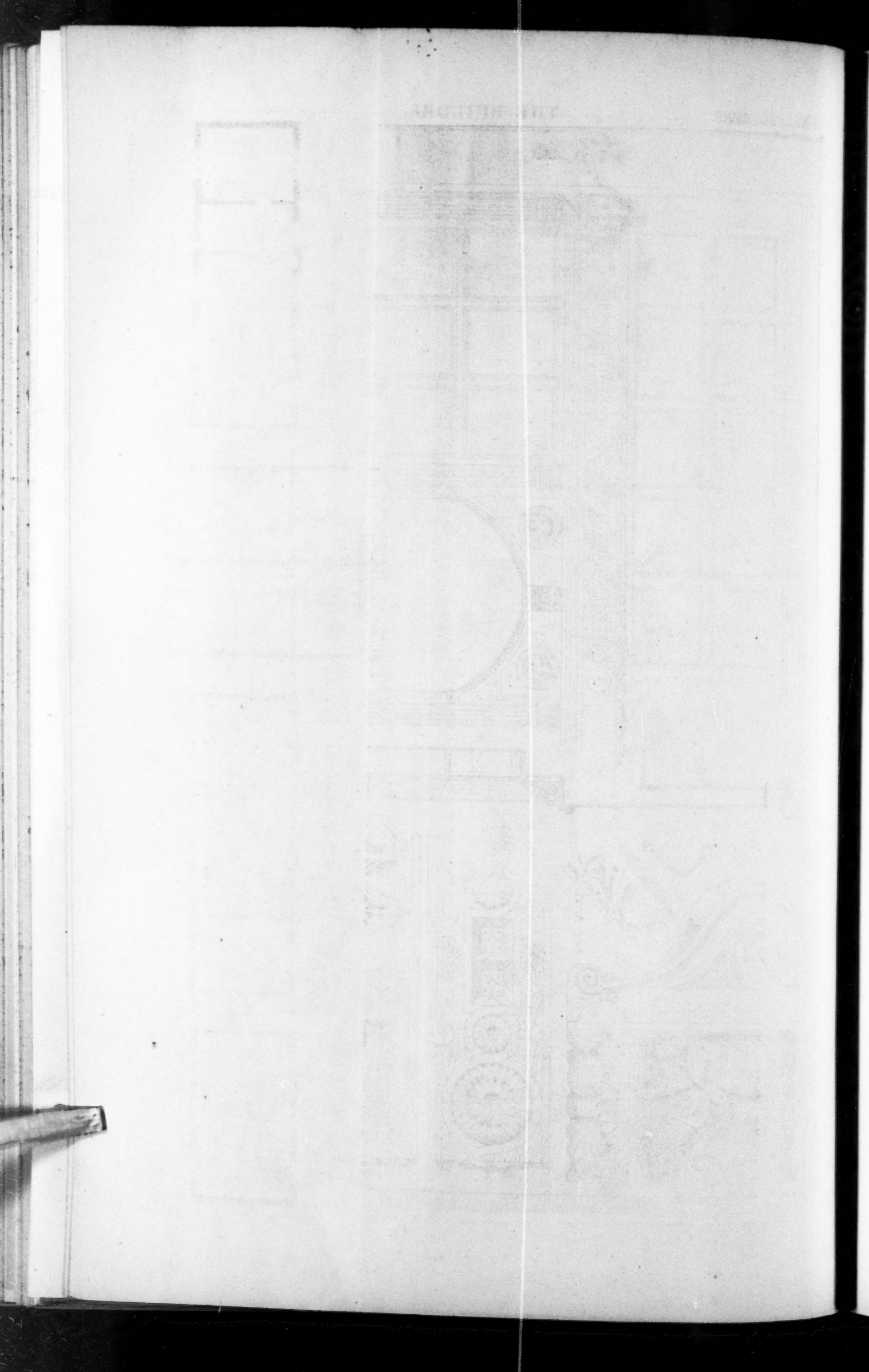
LIVERPOOL CATHEDRAL COMPETITION.—Design by Mr. Wm. Emerson, F.R.I.B.A.

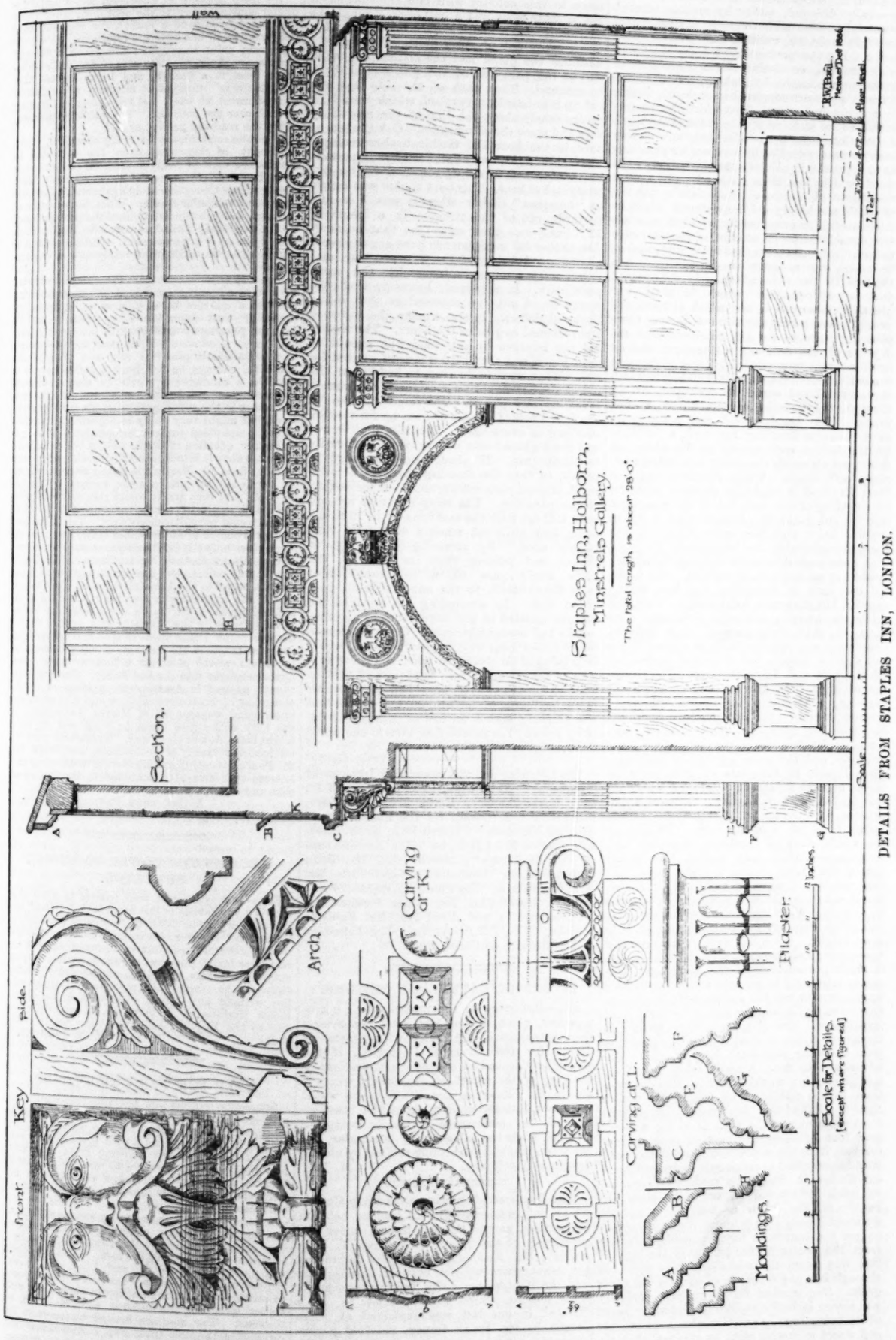
West Elevation.



INK-PHOTO. SPRAGUE & Cº. LONDON.

SCHOOLS AT CLAYGATE, NEAR ESHER.—Mr. Richard J. Lovell, Architect.





DETAILS FROM STAPLES INN, LONDON.

woods the sap was equal in durability to the heart. In an old tree natural decay began at the heart. When in use in a building, timber generally decayed, either by rotting, through becoming sodden with wet, or by dry-rot, caused by slight moisture, warmth, and want of ventilation. For the prevention of decay the Kyanising process, consisting of the application of corrosive sublimate by soaking, was effectual. Burnett's process consisted in enclosing timber in a large iron vessel, from which the air was extracted, so as to empty the pores of the wood. A solution was then admitted, and a very heavy pressure applied by means of air pumps, so as to drive the liquid into the substance of the wood, which was thus rendered proof against the effects of moisture. Doubtless by the use of such machinery ordinary timber might be made useful for purposes for which it was not now considered fit on account of its perishable nature. It did not seem that much was required to make our resinous woods durable when exposed to the atmosphere. In Switzerland and other countries where fir wood was plentiful, houses that had stood at least 400 years showed hardly any signs of decay. Complete exposure to the air, combined with the dryness of the ordinary atmosphere, was in itself a great preservative. Beech timber was useless in construction, as a building in which it was employed would be destroyed, chiefly through the attacks of insects, in a few years. But beech would last many years as a weather-boarding for such a building. In the Indies such insects as the white ant destroyed all woods that were not bitter, especially soft woods. When furniture was sent from England it might be partially protected by a coating of red lead, but if the insects got into the substance they honeycombed it before any-one knew that they were there. It was therefore advisable to impregnate the wood with some protective solution by means of such machinery as had been mentioned. The essential oils, such as turpentine, had been recommended, but they were inflammable. Corrosive sublimate, arsenic, and other poisonous solutions of that class seemed most suitable. Creosoting was effectual both as against decay and against insects, but it spoiled timber for all the best and finest purposes. The protection of wood from fire was a most important question, particularly as recent experience seemed to show that iron or stone could not be depended upon. A heavy wooden beam would resist fire longer than any other beam or girder, and the same applied to staircases. Such liquids as tungstate of soda could be forced into the substance of all wood where fire was to be guarded against. Outward applications seemed to be effectual in experiments tried on a small scale. To sum up the whole class of questions connected with seasoning,—timber was wanted that would not shrink after being brought into use; that would not warp or twist out of shape; would not decay through damp, or be destroyed by insects. Wood might also be indurated, that being the result of polishing and varnishing to some extent. Upon the whole it was desirable to encourage all means of treating wood so that it might possess some of the advantages commonly attributed to iron and stone. In cutting up timber for use the question of its grain as developed by the annular rays was of very great importance. The shrinkage being greater in the newer layers of wood it must be cut so that this irregular shrinkage may be of no disadvantage in use. A plank taken out of the middle of a log would shrink at its sides more than in the middle. The boards cut out to right and left of this plank would curl outward from the centre of the log. If a log was cut into four quarters the part of each quarter furthest from the centre would shrink the most. Nothing required so much care in converting as oak timber in which the medullary rays had so much influence. In order to show the beauty of the grain as well as to provide wainscot boards true in shape it was necessary to get the boards as far as possible to radiate from the centre to the outside of the log. If this was done, the medullary rays were cut through in many places so as to show the silver grain. One method for doing this perfectly was shown in books, though he had never heard of its being done in practice, the great expense and waste in sawing being an effectual obstacle. He had always had English oak "quartered," and then the boards had been sawn from alternate sides of each quarter,—a method which insured at least eight perfect boards, and twice as many very good ones in regard to beauty of grain. Wainscot oak from Riga and Odessa came to this country with two slabs taken off the opposite sides, and a cut clean through the centre; or else it had the slabs taken off and a plank taken out of the middle. When partly seasoned the plank had the centre part taken out, as the part around the pith was likely to be unsound. Then each of the side logs was cut up into boards, several of which would go pretty nearly along the line of the medullary rays and show the silver grain. Oak timber, as used in the beautiful Gothic timber roofs of the Middle Ages, and as still used in important parts of wooden ships, required to be not straight, but bent. This bent timber was known as "compass" timber when it was 5 in. and upwards out of the straight in a length of 12 ft., and was more valued on that account. Ash timber did not appear to have any sapwood, all the wood being of the same colour, and there were foreign timbers with the same peculiarity. It appeared, however, that the worms found out the sapwood, so that it had the usual defect. In elm timber the sapwood was reckoned as good as the heart. The timber did not improve by seasoning, but should be used green, and even kept wet until wanted for use. When used in flooring, he had known the oldest elm boards shrink considerably if merely taken up and planed. The important uses of the finer kinds of wood when cut up for veneers must not be overlooked. The fact that veneer was much abused was no argument against its legitimate use. It should only be used in panels, so that the framing would be of solid wood, of good plain colour, to set off the beauty of the panelling. The most beautiful veneers were still cut with the saw from 10 to 16 to the inch; and knife-cut veneers were also very largely used. By steaming large logs of timber, and putting them in a lathe, the knife would pare off a continuous sheet from the thirtieth to the one-hundredth part of an inch. In concluding his remarks the lecturer insisted on the importance of the subject he had brought forward. Other gentlemen would follow him, who, happier than he, would be privileged to discourse upon the great subjects of beauty and fitness in the use of timber. That evening, however, they had been nearer to the beginning of the subject, and unless that was properly stated, no art of man, could entirely remedy the mischief, or give to the world the benefits art was able to confer.

The following are the remaining lectures of the course:—Feb. 24th, Prof. Corfield, M.A., on "Water Traps"; March 3rd, Prof. Kerr, F.R.I.B.A., "A Gossip on the Philosophy of Building Materials"; March 10th, Mr. T. Chatfeild Clarke, F.R.I.B.A., on "The Architecture of City Buildings"; March 17th, Mr. John Slater, B.A., on "Concrete"; March 24th, Mr. H. H. Statham, on "The Fine Art Aspect of Woodwork"; March 31st, Mr. James Doulton, on "Terra-cotta"; and April 7th, Mr. Banister Fletcher, M.P., F.R.I.B.A., on "The Influence of Architecture on Carpentry."

LIVERPOOL CATHEDRAL DESIGNS.

SIR,—Referring to the remarks by a correspondent, given in your last issue, concerning the construction of the dome in Mr. Emerson's design for the Liverpool Cathedral, if the writer had looked at the plan and sections in the copy of the report on the design, which is also in the Library of the R.I.B.A., he would have seen that the walling above the intersection of the pendentive arches is octagonal on plan, while the balustrading is circular, and the triangular soffits he refers to filled by niches, figures, and columns.

M. N.

The Proposed Birmingham Ship Canal. At an influential meeting of traders held on Wednesday, at the Council House, under the presidency of the Mayor (Alderman T. Martineau), Mr. Keeling's project for improving the canal communication between Birmingham and the Western ports was further considered. The scheme, which was referred to in a "Note" in our last, was explained at some length by Mr. Frank Impey, received a considerable amount of support, and ultimately, on the motion of Mr. A. Hickman, M.P., a committee was appointed to investigate it in detail, and to report it to another meeting.

ST. PAUL'S CATHEDRAL APPROACHES.

SIR,—There is great danger of this important question being decided on a false issue.

We have appeals to sentiment and a claim for public convenience; if the sentiment were sound and the convenience a reality, the proposal could not be opposed, but both are factitious.

A great point is sought to be made of the real narrowness of the roadway east of St. Paul's Cathedral; true, it is narrow, and I am informed that the Mercers' Company effected a successful encroachment at their last rebuilding by throwing an arch over the pathway. This can be withdrawn, but is the roadway needed at all?

If public convenience be really consulted, if the sentiment of throwing open the cathedral to spectacular view be really desired, the proper course is to begin on the north side. It affords a direct passage from Cheapside to Ludgate Hill, and should be open to vehicular traffic. What, in the name of common sense, is the *rationale* of the present line of traffic, needlessly forced all round St. Paul's, which folly, because it is perpetrated, affords a ground of argument for the still greater folly now in contemplation.

If money is to be spent, let the outlay be effected for a solid advantage and *bonâ fide* necessity, viz., to save a quarter of a mile or so, in travelling south by west from the City, which is lost in time to passengers and sunk in labour of cattle, and for no good at all. But need money be sunk in this beneficial plan? I say, no! For, if the cathedral railings be set back a sufficiency, as is possible, a carriageway would be opened without trespassing on the house frontages at all; the present steps to the north gate entrance are very awkward, but might very easily be adjusted with a view to the proposition under consideration. There remains the question of traffic east of the cathedral: I assume that it is infinitesimally small. At present vehicles from St. Martin's-le-Grand circumnavigate St. Paul's *vid* the east passage, *because they cannot get north*, and such traffic would gain most of all by the course suggested; what remains after its elimination would be undistinguishable. The Royal Exchange is centre of an enormous traffic and open on three sides only; it is, therefore, open to consideration whether a footway for traffic east of St. Paul's would not suffice, and the remaining traffic from Cannon street to the Post Office, go by Old Change. One of the objections to my plan is that the shopholders north of St. Paul's would consider themselves injured by the intrusion of a general traffic. On this point I take leave to note that steps are in progress to widen the Sessions House; before it is too late I would plead for a footway from Amen Corner straight into the Old Bailey. There is much vacant ground in Amen-court, a strip of which, alongside of Stationers' Hall, would take us to the unoccupied wagon-yard of Messrs. Lavington; if the City authorities mean to build over it, they might leave us a covered way. This would carry off all business traffic of pedestrians, and leave the St. Paul's pavement much relieved, so affording any loiterer full leisure to contemplate the beauty of silks and satins.

A CRY FROM PATERNOSTER-ROW.

Feb. 12, 1886.

ARCHITECTS' POWER TO EMPLOY SURVEYOR.

SIR,—It may interest your readers to know that the view you favour in last Saturday's "Notes" was also affirmed in the Court of Session in Scotland, in the action "Black *v.* Cornelius," 1879, in which it was held that an architect is a general agent of his employer for all purposes necessary for the carrying out of the works, and that, consequently, he has authority to employ a surveyor to take out quantities without any special consent from his client. Baron Huddleston is, therefore, in opposition not only to the English, but also to the Scotch precedents.

A. R. PRENTICE.

HELP FOR THE UNEMPLOYED.

SIR,—The distress now prevailing among the unemployed must be my excuse for asking you to insert this letter. Some of the workmen in my employ having expressed a wish to assist their out-of-work brethren, and knowing from experience how ready they always are to help each other in case of necessity, I formed a committee at my head office here, and the following arrangements were made.

Posters were distributed to my various works, &c., stating that a weekly collection would be made at the pay-table by each of the foremen, assisted by a representative chosen by the men. The first of these was made last Saturday, and, I am glad to say, realised a very satisfactory amount. It is proposed to continue this for five weeks, by which time, with better weather, the distress will, we hope, be lessened. The men are invited to report to the committee through their own representative any cases of want which come under their personal notice. These, after examination, will be forwarded with the amounts collected, to the London Bible and Domestic Female Mission, 2, Adelphi-terrace, Strand

be honorary secretary of which most excellent institution has kindly consented to distribute in money or otherwise, as most applicable, to deserving cases, those above referred to taking precedence. This society has a large number of workers distributed over the whole metropolitan area, and their constant contact with the working classes gives them every opportunity of judging as to the necessities of those for whom the fund is intended.

My object in entering into these details is that the *employés* of other firms (where they have not already done so) may be induced to do likewise.

JOHN T. CHAPPELL.

149, *Lupus-street, Pimlico.*

THE "ECONOMISER."

SIR,—Mr. Pridgin Teale may feel interested in knowing that the "Economiser" which he advocates so strongly, and which is the "central principle" of his treatment of fireplaces, has been in use for many years in the South of England, and with good results.

The idea of this movable shield, closing in the space under the fire front, occurred to me nine or ten years ago, when I had two of them made, and applied them to existing stoves in the Isle of Wight; So I am five years ahead of Mr. Teale in his discovery; but shall not be surprised to hear that I have been anticipated by others in so obvious an improvement of the old-fashioned grate.

L. C. RIDDETT.

The Student's Column.

FOUNDATIONS.—VIII.

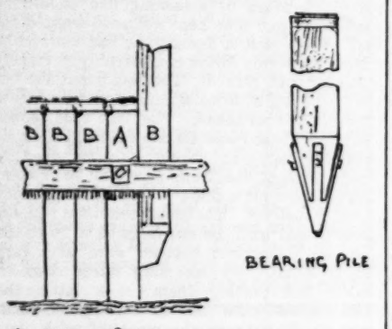
PILE FOUNDATIONS.

PILES, though of very common use in engineering works, are seldom employed in the foundations of ordinary buildings. They are, however, amongst the oldest building appliances known, and their durability is very far beyond what might be supposed.

They are found under the pre-historic lake dwellings that have been dug up chiefly in Switzerland. They were used by the Phœnicians in harbour works in North Africa, as may still be seen. Oaken piles in very good preservation are found in waterside works of Roman date, and Mediæval specimens taken up from under the piers of Old London Bridge seem as hard as horn. In Venice such works as the walls of the Arsenal and the Tower of St. Mark's stand on close piling. In the sixteenth century the Dutch were quaintly described by Erasmus as a people living on the tops of trees like crows. If the mud and bog and sand that form the ostensible support of a Dutch town could be quietly withdrawn, the full significance of this description would become apparent. At Amsterdam, the Palace,—a seventeenth-century building of the largest class,—stands on more than thirteen thousand piles driven 70 ft. into the earth. Whether from some degree of decay in the fir timber, of which piles are usually made, or, more probably, from overloading, large buildings have at times sunk down very considerably into the mud. At Dordtrecht the tall gables of seventeenth-century houses incline outwards over the footway to an alarming extent, and are evidently prevented from falling only by iron ties. It is, indeed, the invariable custom of those who build in the treacherous soil of the Low Countries to use such ties, and they form a very conspicuous and ornamental feature in Dutch architecture. We may hesitate to assume that the subsidence which is often very evident is due to decay in the piles; for, unless they have reached a firm foundation, they are likely to sink little by little as long as the building stands. Decay, indeed, is often observed in those parts which are above the permanent level of the water in the soil, but it is seldom possible to examine the condition of piling below that level. Some of the fir piles taken up from the foundations of old Westminster Bridge were as sound as when driven 120 years before. Upon the whole, we may consider that oak and elm have, when submerged, a durability that is equal to any requirement, and that fir timber, similarly placed, has also very great durability, the extent of which is not so well known.

The simplest way of using piles is to drive into the ground stakes of as large size as can be forced down by the blows of a heavy mallet. If these stakes should not reach down to firm earth they will consolidate the surface soil so as to give a better support to a light structure than it would have without them. The simplest method in use for driving piles of the dimensions of trees is that known as a "ringing engine," from some likeness to the mode of ringing bells. A rope is carried through a pulley that is fixed above the pile, and a heavy weight is suspended by it. When the weight has been raised some three or four feet by the united efforts of about a score of men, who pull at the rope by means of separate cords that are attached to it, they let it drop suddenly upon the head of the pile. In this way two rows of common round fir piles may be driven closely along the line of a wall so that stout planking may be fixed upon them to receive the brickwork.

The "monkey-engine," which is in common use for driving piles made of squared timber of full dimensions, is arranged to drive with a much lighter ram falling from a greater height. Thus, a ram or monkey will be made to fall 10 ft. or 15 ft. It is raised by a small windlass turned by two men, and when it has reached the required height it is released by self-acting gear, slides down the upright guides in which it works, and falls on the head of the pile. Rams arranged in a somewhat similar way, but raised by steam power, are made of a ton weight, and capable of working with a fall of more than 30 ft.



In the "steam ram," which is an adaptation of Nasmyth's steam hammer, there is a return to the principle of a heavy weight falling through a small space. The weight in this case is from one ton to one and a half, and the ram will deliver sixty blows per minute, this being by far the most rapid and efficient means by which piles in large numbers can be driven, though other systems have their advantages in special cases. A heavy ram falling through a short distance is better than a light ram with a long drop, as the shock is not so great, and there is less danger of injury to the head of the pile. The reason of this is evident if we consider that the light ram, in order to produce a given result, must cause the pile to assume a quick motion instantaneously, while the heavy ram, falling much more slowly, will press the pile down comparatively gently. In the latter case there is some approach to the effect of the actual load that the pile will have to bear. Piles may be driven into soft mud, in which they will stand and carry a load, chiefly by virtue of the resistance caused by the friction between them and the semi-fluid mass in which they stand. But this can never be considered a satisfactory result, for when the permanent load comes on such a pile it will in time, by steady, persistent pressure, gradually overcome the resistance of the soft earth, and this will then yield, although it would not yield to the momentary shock of the pile-driver.

Books.

The Arts in the Middle Ages and the Renaissance. By PAUL LACROIX. English Edition, revised and re-arranged by W. ARMSTRONG, B.A. London: J. S. Virtue & Co.

THE first English edition of this work appeared sixteen years ago, and was reviewed by us at considerable length,* and its various merits fully admitted. But a great deal has happened since then, and it can scarcely be said that the present edition stands in the same relation that its predecessor did to our knowledge of the arts whereof it treats. It is nevertheless an interesting, and in many respects a useful work. It professes to embrace "all the arts from the fourth to the latter half of the sixteenth century," and to be in fact not only a history of the arts themselves but of the epochs in which they were developed. It is obviously impossible to bring an adequate treatment of so vast and complicated a subject within the compass of less than 500 large-print pages. Architecture is disposed of in thirty-five pages, sculpture in thirty-one, painting in twenty-six, which is sufficient evidence that only a very cursory glance is given to those important arts and the epochs which they adorned. Architecture is the greatest sufferer; and the author is sensible of the fact. Its history demands, he says, either a short epitome or a thorough investigation. He has given us neither, and it is to his treatment of the minor arts that the real interest of his work attaches. The chapters on Gold and Silver Work, on Playing-cards, on Music and Musical Instruments, show great research, and are both instructive and entertaining, and the same may be said of the chapters on Bookbinding, Printing, and Manuscripts. Heraldry, which played so important a part in the arts of the Middle Ages, is unaccountably omitted. The book is an assemblage of odds and ends of information on a great variety of subjects connected with the arts, great and small, and it is little more; but it has its place and use, and will, no doubt, continue to find a wide circle of readers. The illustrations, over 400 in number, show little or no deterioration, and the paper, type, and general get-up of the work leave nothing to be desired.

* See the *Builder* for March 26, 1870.

Spon's Architects', Builders', and Contractors' Pocket-Book of Prices and Memoranda. 1886. Edited by W. YOUNG, Architect. Thirteenth edition. London and New York: E. & F. N. Spon.

A BOOK which has reached its thirteenth edition scarcely needs commendation. This one is surprisingly full of useful information, which is no less remarkable for its general accuracy than for its amount and variety. The author asks for suggestions calculated to improve it. Here are a few. The table of cost per cubic foot of public buildings should state whether the measurements are all on an identical basis, and how the buildings have been measured, and give dates of erection. Without this the value of the information is much reduced. The table of comparative prices of builders' work in 1703 and 1876 might be usefully extended to include a column for 1886; and if other dates could be interpolated the interest in the progressive growth of prices would be greater, and the statistics of more practical value. The section on valuation of leasehold property is incomplete because it does not specify what it is that is to be multiplied by the given number of years' purchase, viz., the net profit rental; nor how that net rental is to be arrived at. The subject should be omitted altogether or treated in reasonable detail. We have no fault to find with the prices generally, which are fair. The schedules of manufacturers' goods might in some cases be amended, *e.g.*, the list of water-closet apparatus is confined to valve and pan closets, and omits all reference to the various forms of wash-out closets, which are every day becoming more generally used.

The Acts of Parliament do not comprise the Metropolitan Building Act as such, although all that need be known on the subject is given under "Thickness of Walls." The alphabetical arrangement of the contents is a convenient one. There is a good index, and (rare virtue in a book of this kind) the handiness of the little volume has not been impaired by advertising sheets. It is a book for which every architect should thank the author.

Lockwood's Builders' and Contractors' Price-Book, 1886. Edited by FRANCIS T. W. MILLER, Architect. London: Crosby Lockwood & Co. 1886.

ALTHOUGH merely entitled a "Price-Book," this work comprises short introductory essays on the several building trades and the measurement of builders' work, and includes a form of building contract, the Metropolitan Building Act, and numerous tables. This is a doubtful form of composition, and one not to be indiscriminately commended; for the qualifications necessary for the essays do not necessarily extend to the prices, and the knowledge of the prices of builders' work does not necessarily warrant its possessor in dealing with the theory and practice of construction.

As a rule, a price-book had better be a schedule of prices merely, and a work on the building trades be unhampered by questions of cost. In the present work the section on concrete construction contains statements which passed unchallenged twenty years ago, but which now require some modification. Concrete roofs are not water-tight unless protected by cement or asphalte. Concrete walls are not good non-conductors of sound, and so on. Moreover, the *cons* should be given with the *pros*, and the unfortunate property which a concrete wall has of cracking from top to bottom, like a china plate, on the least inequality of bearing, being without the elasticity of a jointed construction, should be touched upon if the subject is to be treated at all.

The prices strike one as high, and as based upon a contractor's standard, rather than upon one which an architect would adopt. But the book contains a vast amount of information of a miscellaneous kind, and is well indexed.

James Nasmyth, Engineer. An Autobiography. Edited by SAMUEL SMILES, LL.D. A new edition. London: John Murray. 1885.

WE reviewed this book at considerable length on its first appearance, and its reperusal, now that a new edition has become necessary, has given us fresh pleasure. The subject of it came of a remarkable and variously-gifted family, and his plain, unvarnished account of his forbears and their lives has all the charm of a work of fiction with the added interest of being true. A little comfort at the present juncture may be sucked from his graphic account of the attempted building of the Fort at Inversnaid by his great-great-grandfather, whose work was brought to an abrupt close by Rob Roy and his wild companions in a way which resulted in the death of the courageous builder. The state of Scotland in 1703 was not unlike the state of Ireland now. It is, therefore, not beyond hope that Ireland may hereafter be as peaceful and happy as Scotland now is. The many beautiful drawings and designs embellishing the work show James Nasmyth to have been no less gifted as an artist than he proved to be eminent as a man of science and an engineer.

The Combined Number and Weight Calculator. By WILLIAM CHADWICK, Public Accountant. London: Crosby Lockwood & Co. 1886.

THIS bulky volume, the result of an immense amount of patient labour, gives upwards of 250,000 separate calculations "showing at a glance" (we quote from the title-page) "the value, at 421 different rates, ranging from one-sixty-fourth of a penny to 1*l.* each, or per cwt., and 20*l.* per ton, of any number of articles consecutively from 1 to 470." Thus, has a builder to use 23 tons 7 cwt. of any material at 3*l.* 16s. 8d. per ton, he has only to turn to Mr. Chadwick's page, headed with that price (and which also gives prices per lb. and per cwt.), and run his eye down the column till he gets his amount, 89*l.* 10s. 2d. The use of such a work is not to be reckoned in regard to occasional and isolated calculations, but to cases in which a large number of varying amounts of materials, some at fractional prices, have to be priced with as little delay as possible. Each page also, besides giving prices per a given weight, gives them per so much an article. Thus, if instead of calculating so much per ton, our contractor or manufacturer has to price 467 articles at 3s. 9½d. each, he will run his eye down the numbers column instead of the tons and cwt. column, and will find his 89*l.* 10s. 2d. opposite No. 467. The same column of numbers is made also applicable to prices per cwt. The prices for single articles or cwts. increase by a ¼d. each page, and those of tons of course, by 10d., in the bulk of the work; the earlier pages, however, advance by smaller fractions, commencing at $\frac{1}{64}$ of a penny per article. The volume is likely, we should imagine, to be very useful to contractors and estimators, not only in the saving of time but of brain work in repeated calculations. It is one of those books in the production of which virtue may be said to be its own reward, for they seldom bring fame or pecuniary return to their authors, who have to be content with the consciousness of having done something practical for the convenience of others. Mr. Chadwick concludes his preface by saying that he will be very thankful for any suggestions that may lead to the improvement of the work in future editions.

The Strength and Proportions of Riveted Joints. By BINDON B. STONEY, LL.D. London: E. & F. N. Spon.

THE author of this work has done excellent service in collecting together and presenting in a portable form a good deal of that vast amount of information on various questions of riveting that lie scattered so widely in the Transactions of the many scientific and technical societies and institutions. The problem of joining iron or steel plates by means of rivets involves so many different considerations of varying complexity that the amount of experiment and research necessary to establish a sound theory of riveting must be enormous. Although much yet remains to be done, much has already been accomplished in this direction. Dr. Stoney casts a wide net, and the copious references he gives to the sources from which he quotes add particularly to the value of his book.

Some Particulars of the Municipal and Sanitary Works of Blackburn. By J. B. MCCALLUM, Borough and Water Engineer. Blackburn: Printed by J. Janson.

THE author has put together a few disjointed notes on the Sewage Water and Gas-works of Blackburn. These are bound up with various plans and "ink-photo" illustrations, and form the volume indicated above. The Blackburn corporation, under pressure exerted by the Rivers Pollution Commissioners, have established sewage farms some distance outside the town. The yearly loss on one of these farms is about 600*l.*, but on another there is an annual profit of 900*l.*, which is a little over 1½ per cent. on the first cost of 70,000*l.* The total expense of these irrigation works has been 129,328*l.* The particulars given are far too meagre to enable the book to be of much practical value to any but those who have a previous knowledge of the district and the work done.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

15,266, Casement Stay. A. B. Milne.

A rod is pivoted to the casement, a thumb-screw passes through a clip into a plate on the window-sill. The clip can turn on the thumbscrew when the window is opened, but grips the stay when the screw is turned.

15,355, Wall Ventilator. T. S. Ellis.

The ventilator consists of an L-shaped box, which gives the incoming air an upward direction. In a portion of the box may be placed any suitable device for filtering, perfuming, heating, disinfecting, or cooling the air as it enters the room. The ventilator may be opened, partially opened, or closed by a shutter or valve, which is also arranged to slide upwards clear of this portion of the box when access to the latter is desired.

9,357, Kilns. L. Williams.

In the body of the kiln is constructed one or more fire-clay columns, with apertures. These apertures are fitted with iron or fire-clay boxes, in which are fixed bars or bricks. Combustible gas is led into a tube within the column, thence into the column through openings, where it mixes with air which is forced into the annular space between the columns and the tube. The mixed gases pass through the apertures, and are ignited, thus burning the lime, bricks, &c.

16,709, Chimney Cowl or Ventilator. J. White.

On a central shaft or tube are fitted a number of radial webs or ribs. The lower ends of these webs are closed by a conical case or plate, and the upper ends are partly covered by another conical case, between which and the tube an air-space is left. The wind passing through induces an up-draught in the shaft. In some cases a curved or conical web or plate is provided, fixed between the plates, so as to form a double set of passages for the wind.

NEW APPLICATIONS FOR PATENTS.

Feb. 5.—1,691, J. W. Helliwell, Zinc or Metal Roofing.—1,706, J. & A. Cooke, Syphon Cisterns for Flushing Water-closets.—1,742, J. Bauer, Pipe Cutter.—1,744, T. Hare, Floorings, &c.

Feb. 6.—1,762, J. Wilson and Others, Breakwaters.—1,765, J. Chapman, Weatherproof Tile.—1,787, W. Lake, Screw-threaded Nails.

Feb. 8.—1,804, W. Howie and R. Henderson, Windows.—1,816, W. Joy, Charging Cement Kilns.—1,819, A. Gates, Bakers' Ovens.—1,836, J. White, Portland Cement.

Feb. 9.—1,852, H. Owens, Casement Stay.—1,862, R. Hunter and J. Turnbull, Kitchen Ranges.—1,894, J. Brewster, Heating or Cooling Buildings, &c.

Feb. 10.—1,912, G. Woolliscroft and T. Freeman, Tiles.—1,917, R. Quinn, Saw Guide.—1,936, W. Scarlett, Pipe Tongs and Cutters.—1,945, W. Thompson, Improving Chimney Draught.

Feb. 11.—1,938, J. Shanks, Connexions for Baths, Sinks, &c.—W. Baker, Ornamentation of Mouldings.—1,996, W. Haigh, Wood-cutting Machine.—2,014, J. Armstrong, Locks and Latches.—2,017, J. & J. Mason, Frames for Window-sashes.

PROVISIONAL SPECIFICATIONS ACCEPTED.

14,134, W. Wood, Apparatus for Soldering and Brazing.—14,977, C. Henderson, Ventilating.—15,133, L. Scott, Glass Levels.—15,506, G. Whitehead, Chimney Cowls, &c.—15, M. Golightly, Door or Window Fastener.—26, A. Barker, Urinals.—78, C. Watkins, Graining Tools.—179, R. Evered, Connecting Door Knobs to Roses of same.—215, C. Homer, Window Sash-Fastener.—255, W. Gallon, Stone or Concrete Piers, &c.—554, G. Nolton, Cowl and Ventilator.—657, W. Wade, Preventing Down-Draughts and Smoky Chimneys.—891, C. Hodges, Pipe Joint.—15,517, A. Mumford, Brick-Crushing Machine.—19, W. Carr, Preventing Concussion in Water Pipes.—299, J. Revill, Electric Indicators for House Bells.—307, A. White, Lavatories.—364, J. Hyde, Sash-Fasteners.—407, J. Jennings and Others, Flushing Cisterns.—411, B. Sutcliffe, Hand Planing and Thicknessing Machine.—488, W. Youlton, Butts of Hinges.—547, W. Green, Door Bolts.—587, T. Brattan, Hanger Attachment for Sliding Doors.—838, B. Ramsden, Ladders.—977, J. Nichols, Nails.—1,171, F. Balbi, Sharpening Edged Tools.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

2,788, E. Prince, Adjusting and Fastening Windows.—3,232, A. Maher, Door Checks.—3,897, J. Johnson, Artificial Stone.—4,169, J. Holloway and H. Stanning, Window Fasteners.—4,613, R. M'Queen, Stoves for Heating Buildings.—9,211, H. Gibbs, Flushing Water-closets.—12,706, J. Green and Others, Fire Grates.—13,173, W. Brewer, Fastening Windows, &c.—1,998, T. Roberts, Gill Stoves, 7,738, G. Pfeifer and M. Schütz, Apparatus for Heating Soldering Tools.—20, W. Kellett, Plane Bits.—441, J. Pullar, Opening and Closing Windows, Ventilators, &c.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

FEB. 8.

By COLLETT & COLLETT.

Westbourne Park—23, Acklam-road, 80 years, ground-rent 8*l.*	£365

FEB. 9.

By C. & H. WHITE.

Pimlico—25, Ranelagh-grove, 11 years, ground-rent 3*l.*	205
28, 29, and 30, West-street, 37 years, ground-rent 14*l.*	700

By A. RICHARDS.

Dalston—113, Haggerston-road, 33 years, ground-rent 3*l.*	270
Lower Tottenham—Two freehold houses with shops	530
Tottenham, High-road—Two freehold houses and plot of land	900
16, 17, and 18, Church-road, 56 years, ground-rent 4*l.*	610
1 to 4, Orchard-place, 56 years, ground-rent 3*l.*	470
1 to 6, Church-terrace, freehold	1,020
3, Chestnut-road, freehold	295
1 to 10, Peart's-cottages, freehold	1,300
1 and 2, Hope-cottages, 70 years, ground-rent 4*l.*	300
8, 9, and 12, Western-terrace, freehold	785
Stoke Newington—96 and 98, High-street, 26 years, ground-rent 31*l.* 10s.	975
Tottenham—Ground-rent of 21*l.* 10s., reversion in 46 years	550
Ground-rent of 11*l.* 3s., reversion in 45 years	305
Ground-rent of 11*l.* 10s., reversion in 37 years	340

By T. B. WESTACOTT.

Camden-town—1a, Camden-road, 66 years, ground-rent 20*l.*	565
Kentish Town—Ground-rent, 100*l.* a year, reversion in 47 years	2,520
Ground-rent, 40*l.* a year, reversion in 62 years	1,015
21, Prince of Wales-crescent, freehold	700
7, Castle-road, 48 years, ground-rent 5*l.* 10s.	475
59, Willes-road, 35 years, ground-rent 8*l.*	340
King's-cross—32, Argyle-square, 18 years, ground-rent 7*l.*	715

By HUMBERT, SON, & FLINT.

Watford—2 and 4, St. Alban's-road, freehold	1,230

FEB. 11.

By NEWBON & HARDING.

Canonbury—Improved ground-rent, 41*l.*, term 32 years	620
Holloway-road—No. 70, freehold	640
Old Ford—172, Roman-road, freehold	805
Bermondsey—135 to 145 odd, St. James's-road, 47 years, ground-rent 21*l.*	1,415
147 to 157 odd, St. James's-road, 47 years, ground-rent 21*l.* 7s.	1,425

By CRAFTER, HARRIS, & CO.

New Cross-road—Nos 44 to 50 even, freehold	1,775
Acton, Gunnersbury-lane—"Bromley Cottage," freehold	605

By WALTON & LEE.

Wimbledon—Ground-rents of 41*l.* 15s. reversion in 94 years	1,275
Ground-rents of 57*l.* a year, reversion in 67 years	1,765
Ground-rents of 3*l.* 2s. a year, reversion in 66 years	555
Ground-rents of 130*l.* a year, covering 10a. 3r. 27p., reversion in 71 years	5,000

FEB. 12.

By BAKER & SONS.

Crouch-hill—"Womersley House," and 2a. 0r. 15p., freehold	3,850
Poplar—11 to 15, Latham-street, 81 years, ground-rent 15*l.*	1,615
3, 4, and 5, Sussex-street, 67 years, ground-rent 3*l.*	600

By NORTON, TRIST, WATNEY, & Co.

City—83 and 84, Queen-street, freehold, area 16,000 feet £16,000
Creed-lane—A plot of freehold land, 520 feet..... 2,525
Vauxhall—1, Auckland-street, freehold 730

MEETINGS.

MONDAY, FEBRUARY 22.

Royal Academy of Arts.—Lectures on Architecture: Mr. G. Aitchison, A.R.A., on "Architectural Education," 8 p.m.
Surveyors' Institution.—Mr. Wm. Woodward on "London Remodelled." 8 p.m.
Inventors' Institute.—8 p.m.
Liverpool Architectural Society.—Mr. A. G. White on "A Few Points in Practical Plumbing." 7 p.m.

TUESDAY, FEBRUARY 23.

Royal Institution.—Professor C. T. Newton, C.B., on "The Unexhibited Portions of the Greek and Roman Sculptures in the British Museum." II. 8 p.m.
Institution of Civil Engineers.—Discussion of Mr. L. F. Vernon-Harcourt's paper on "The River Seine." 8 p.m.
Builders' Clerks' Benevolent Institution.—Annual meeting. 7 p.m.

WEDNESDAY, FEBRUARY 24.

Carpenters' Hall, London Wall.—Professor Corfield on "Water Traps." 8 p.m.
Society of Arts.—Prof. W. C. Unwin on "The Employment of Autographic Records in Testing Materials." 8 p.m.
Civil and Mechanical Engineers' Society.—Mr. B. Haughton on "Wave Motion." 7 p.m.
Liverpool Engineering Society.—Mr. A. Wharton Metcalfe on "Bricks and Masonry Arches." 8 p.m.

THURSDAY, FEBRUARY 25.

Royal Academy of Arts.—Lectures in Architecture: Mr. G. Aitchison, A.R.A., on "Mouldings." 8 p.m.
St. Paul's Ecclesiological Society.—Mr. J. F. Seddon on "A Series of Architectural Monuments." 7·30 p.m.
Society of Antiquaries.—8·30 p.m.
Society of Telegraph-Engineers and Electricians.—Prof. D. E. Hughes, F.R.S., on "The Self-Induction of an Electric Current in Relation to the Nature and Form of its Conductor." 8 p.m.

FRIDAY, FEBRUARY 26.

Architectural Association.—Mr. William White, F.S.A., on "Brickwork and the Tower of Bologna." 7·30 p.m.
Institution of Civil Engineers (Students' Meeting).—Mr. Henry A. Cutler on the "Stability of Voussoir Arches." 7·30 p.m.

SATURDAY, FEBRUARY 27.

Architectural Association.—Visit to the New Buildings of Sion College and the Offices of the London School Board. Members to meet at the College, Victoria Embankment, at 2·30 p.m.
Royal Institution.—Rev. C. Taylor, D.D., on "The History of Geometry." 3 p.m.
St. Paul's Ecclesiological Society.—Visit to St. Paul's Cathedral. 2·15 p.m.
Edinburgh Architectural Association.—Visit to Museum of Science and Art.

Miscellanea.

Fatal Accident at the Proposed "Shipperies" Exhibition, Liverpool.—A sad disaster occurred on Tuesday afternoon at the Exhibition Building. The erection of the iron framework of the building is being pushed forward as speedily as possible, with a view to its completion by the 1st of May, and a large number of men are employed upon the work. The northern transept was in a tolerably advanced condition, a number of pillars having been erected and a good deal of the framework of the roof fixed. From some cause not explained, this portion of the building collapsed while a number of men were working upon it, and fourteen men were so much injured that they had to be removed to the Royal Infirmary. One of them has since died.

English v. American Locks.—American lock-makers will have to look out, for, according to *Invention*, thanks to the introduction of machinery in the English lock trade, and to other methods of improvement, American competition is rapidly becoming of less account, and now it has been determined by English makers to turn the tables upon the Americans and commence a vigorous competition with them in the Australian colonies, India, and China. It appears that the Americans have obtained a stronghold in those markets with a rim (door) lock, which has a cast-iron case bearing ornamental designs, and which has the advantage of possessing a reversible bolt. The internal parts of this lock are made to template. It is now stated that a firm of Willenhall lock manufacturers have resolved to make locks of an exactly similar class, and to offer them in large quantities in the markets referred to.

The Health Exhibition, 1884.—Although the Health Exhibition has been closed for fifteen months, the Diplomas of Honour and Special Certificates have not yet reached the exhibitors to whom they were awarded.—*Invention.*

Falmouth.—Mr. J. Wm. Trounson of Penzance, has been appointed the architect for the Pike's-hill Wesleyan chapel and new school premises, and has received instructions to proceed with the necessary plans forthwith.

The Grant Monument.—In the American Congress, the Committee on Military Affairs has reported favourably regarding the proposed vote of 500,000 dols. for the erection of a monument in New York to commemorate the achievements of the late General Grant. The appropriation will remain unavailable until the voluntary subscriptions to the Monument Fund have reached the sum of 250,000 dols. The Bill received the unanimous support of the Military Committee, and it is anticipated that the House will very shortly take further proceedings in the matter. The question of the locality will in all probability provoke considerable debate, in consequence of many of the members considering that the monument ought to be erected at Washington.

New South Wales Timbers.—Probably no country in the world possesses finer or more durable hardwoods than New South Wales. According to the Immigration Agent for the Colony, her pines and cedars, valuable though some of them may be, yield the palm to those of other lands; but her ironbark and blackbutts rank, for durability and strength, second to none on the globe. Singularly enough, all the principal hardwoods used in the Colony are myrtaceous trees, that is, members of the great Myrtle family, which, according to Professor Balfour, is divided into five tribes, containing seventy-five known genera, and upward of 1,800 species. Members of this great family are natives chiefly of warm countries, as South America and the East Indies, although many are found in more temperate regions. Some of the genera, such as the eucalypts, are peculiar to Australia, although they have been successfully transplanted in Europe and the East, and in the Campagna at Rome, on the borders of Portugal,—where they have been planted by the *vignerons* for the making of casks,—and even on many of the hill stations of the Punjaub and Madras the wandering Australian may recognise the tall, rough stem, leek-green leaves, and strong perfume of the sylvan denizens of the sunny south. Eucalypts, which constitute at least three-fourths of New South Wales timber-producing trees, furnish us with the bulk of colonial hardwoods. Ironbark, blackbutt, blue-gum, stringybark, swamp mahogany, tallow-wood, and yarrah, all belong to the same remarkable genus, although they differ from one another in many ways, and in none more so than in their rate of growth, the blue-gums and blackbutts being very rapid growers; while the ironbark and box take a very much longer time to mature. The remainder of hardwoods are principally angophoras, or "apple-trees," most of which are subject to "gum-veins"; tee-trees, tristanias, and syncarpias, better known as turpentine trees, but all members of the myrtle family, and all growing in the open forest, and very rarely in the bush or the scrub.

Sewer Ventilation.—A patent has recently been taken out by Mr. Malvin, of Harrogate, for a method for exhausting gas from sewers, and for consuming or deodorising and dispersing of such gas. The plan provides for the diversion of a town's sewers into sections by the fixing of automatic doors. The sections are to be isolated, and each furnished at a suitable spot, with a chimney or shaft and a furnace, which shall be as nearly as possible smokeless. An upcast shaft from the sewer is to be connected with the ashpit under the furnace. After passing through the fire, the gas is conducted to a reservoir, where it encounters a spray of water designed to lay any solid particles which may have been produced by the action of the fire, so as to prevent their emission into the atmospheric air. The sewer gas, after passing through the fire, is taken by the current up the chimney, and delivered at a considerable altitude above the street.—*Lancet.*

The Durability of Sandstone.—An interesting discussion lately took place in connexion with the use of sandstone from local quarries in the restoration of the Kilian tower at Heilbronn. The municipal architectural officials, acting upon the advice of Professor Beyer, of Ulm, had decided upon employing Oberkirchen sandstone, the cost of which (including transport from the North of Germany) would be double that of the Heilbronn quality. The matter was brought before the municipal council; the opinions of Herr Von Egle, of Stuttgart, and Professor Beyer being officially given in presence of that body regarding the properties of the two descriptions of sandstone. From a statement in the *Deutsche Bauzeitung* it would seem that the Heilbronn stone was considered suitable for internal work, but not for positions exposed to the influence of the weather; while the Oberkirchen stone (chosen after much deliberation for the cathedral at Cologne) justified its higher cost by its tenfold durability as compared with the other variety. The Berlin testing-station had certified that the Heilbronn stone offered a thorough resistance to the weather, but this fact, as well as the assertion that its quality was better than formerly, did not alter the views expressed by the experts; the discussion resulting in a resolution being passed which gave Professor Beyer freedom to act according to his judgment. This was, however, coupled with a recommendation that Heilbronn stone should be used in those portions of the building for which it might be considered suitable.

Work for the Unemployed.—Very extensive tracts of country belong to the Government, and produce very large returns under the name of "Woods, Forests, and Land Revenues," which are managed by a department of the Government known as the "Woods and Forests" at a cost of somewhere about 22,000*l.* a year. There are several commissioners, who receive 1,200*l.* a year; a solicitor, 1,500*l.* a year; clerks and other officers, 900*l.* a year. Such salaries should represent service on very large monetary returns, and so it will be found to be. At the end of one financial year there was a cash and stock balance amounting to more than 600,000*l.* at the disposal of this department for permanent improvements. The extensive tract of Government property, stretching from Windsor Park to Aldershot, admits of very great permanent improvement. The larger portion of it is unreclaimed. To trench some portions and plant with Scotch fir and larch would bring some return for expenditure. To drain the low-lying marsh districts around Bagshot Park, Wellington College, the Royal Military Colleges, and the Camp at Aldershot, would effect a great sanitary improvement, even if confined to those portions of these districts which actually belong to the Government. Here, then, is abundance of work for the unemployed, and 600,000*l.* available in one department of the Government to pay for it, with the prospect of a real permanent improvement to Government property and increased sanitation where it is much needed.—*Lancet.*

The Iron, Hardware, and Metal Trades' Pension Society.—The Thirteenth Annual Ball in aid of the funds of this charity took place on Thursday, last week, at Willis's Rooms. Mr. Jonathan Pearson, of the firm of R. H. & J. Pearson, presided, assisted by a numerous staff of stewards, representing every branch of the metal trades. Thirty years ago the ball was inaugurated by Col. Stedall, J.P., the present President of the Society, with the view to afford not only an additional source of income, but as a means also of bringing together under the most pleasing auspices the numerous friends of the Institution. Through this channel an aggregate of 1,895*l.* has accrued to the general funds.

Durability of Larch.—According to a writer in the *Gardeners' Chronicle*, the wood of the Swiss larch tree,—which often attains colossal dimensions, it being by no means rare to meet with trees 80 ft. in height, with a trunk 6 ft. in diameter,—withstands the influences of air and water equally well. In the Canton of Valais there are many châlets, constructed of larch, dating from the fourteenth century; the wood is entirely blackened by the sun, but it is as firm and sound as recent timber.

Science and Art Department.—The Archbishop of Canterbury has promised to deliver to the students of the Metropolitan Drawing Classes, the "Queen's Prizes," awarded by the Science and Art Department, South Kensington. The meeting will take place on Friday, March 5th, at eight o'clock, in the Memorial Hall, Farringdon-street. These classes, which are held in twenty-four centres, consist of about 800 working men, who are taught, in evening classes, the principles of drawing and construction, as applied to the building and engineering trades. Each class is under the management of a Local Science Committee. Mr. W. Busbridge is the superintendent of the classes.

Architectural Examinations at the Institute.—The following, extracted from the "Journal of Proceedings of the Institute," may be of interest at the present moment:—"A Register is kept at the Institute, containing the names of all those who have passed the Voluntary and Obligatory Examinations. During twenty years (1861-1881), from the commencement to the end of the *Voluntary* Examination, when twelve examinations were held, forty-three candidates passed, and of these twenty-nine are now Members. During four years (1882-85), since the present *Obligatory* Examination came into existence, sixty-eight candidates have passed, out of ninety-six persons who have applied to be examined, and, of the sixty-eight, sixty-four are now Associates, one has not offered himself for membership, and three are deceased after having been admitted Associates. In the Voluntary Examination, a certificate was granted, but passing the Obligatory Examination simply entitles a man to become a candidate for the Associateship. In the *Voluntary* Examination, a candidate had to pay a fee of four guineas to be examined, and if, having passed, he afterwards wished to become an Associate, he had to pay a further (entrance) fee of three guineas; a young man who enters for the *Obligatory* Examination pays a fee of three guineas, which, if he passes, is placed to his account as his entrance-fee should he be elected an Associate within eighteen months from the date of his passing."

Sir Richard Mansel's Estates at Wimbledon.—Amongst the properties offered for sale at the Auction Mart last week were the estates of Sir Richard Mansel, at Wimbledon, the estimated value of which is stated at 80,000*l.* The estates consist of freehold ground-rents and building land, the ground-rents amounting to about 882*l.* per annum, and the rack-rents producing upwards of 5,200*l.* per annum. Messrs. Walton & Lee conducted the sale, the property being offered in forty-four lots. The first nineteen lots offered consisted of freehold ground-rents and building-land in Wimbledon Hill and Worple-road, together with the sites of a church and school shortly to be erected in Mansel-road. The ground-rents were on leases for terms expiring in from eighty to ninety years. The competition was active, the prices offered for the several lots representing not more than from three to four per cent. return on the sums bid, but all the lots were withdrawn as being below the reserve. Five ground-rents, amounting together to 57*l.* per annum, were sold for 1,740*l.*; a ground-rent of 1*l.* per annum, with reversion in sixty-six years, realised 55*l.*, whilst another ground-rent of 12*s.* per annum for a similar term, secured upon five houses, the annual rental of which now amounts to 370*l.* per annum, was sold for 500*l.* A ground-rent of 130*l.* per annum, secured upon the Wimbledon Collegiate School, with reversion in seventy-one years, the total area, including the garden and grounds, being nearly 11 acres, was sold for 5,000*l.* As indicating the value of building land in some parts of Wimbledon, a building site near Wimbledon Hill, containing four acres, was bid up to 2,800*l.*, whilst for another site known as The Grange, at the south end of Wimbledon Common, containing nearly 7 acres, 8,000*l.* was offered. The aggregate sum bid for the forty-four lots submitted was upwards of 53,000*l.*

A Safety Benzoline Lamp.—Mr. William Hardy, jun., of Thisleton, Oakham, has invented and patented a new benzoline lamp which possesses several merits. It is globular in form, weighted at the lower part so as to be self-righting. It is also claimed for it that it is unspillable and self-extinguishing. It is manufactured by Messrs. Snell & Brown, of Birmingham, and only costs a shilling. If the use of this lamp by those who burn benzoline becomes general, the fatalities which so often result from the use of that illuminant are likely to be very materially diminished in number.

The New Home and Infirmary for Sick Children, Lower Sydenham, was opened on Saturday last by Viscount Lewisham. The Home provides cots for fifty children. Special votes of thanks were passed to Mr. Tolley, the Honorary Architect; to the Medical Officers, and to Mr. Aste, the Honorary Secretary.

Appointment.—We are informed that H.R.H. the Prince of Wales, Executive President of the Colonial and Indian Exhibition, has appointed Messrs. Chubb & Son as makers of strong-rooms, safes, and locks to the Royal Commission.

The Registration of Plumbers.—At a meeting at the Guildhall last week, under the presidency of the Master, of the joint committee of the representatives of the Plumbers (masters and journeymen) of London, the decision of the Conference of Metropolitan and Provincial Plumbers, held at the City and Guilds of London Central Institute, in October, 1884; of the general council subsequently formed to give practical effect to the resolutions of that conference; and of a meeting of the plumbing trade of London assembling at Guildhall on the 25th January last, that the registration of plumbers (masters and journeymen) is essential to the due protection of the plumbing trade and the public against the serious injuries which are caused to the public health and to the true interests of the plumbing trade by plumbers' work being carried out by dishonest and unqualified persons, was approved. The registration of the plumbers of the London district is adopted as a preliminary step to the extension of the system of registration throughout the kingdom by means of local organisations. Pending the establishment of local registers, provincial plumbers may register their names in London, if desired, on the same conditions as the plumbers of the London district. The register will be opened by the Plumbers' Company on the 1st March. The fees payable on admission to the register are 2*l.* 2*s.* for master plumbers, and 10*s.* 6*d.* for journeymen.

Royal School of Mines.—Prof. Warington Smyth, F.R.S., in continuing his lectures on "Mining," in the Theatre of the Geological Museum, Jermyn-street, considered the question of dry rot as affecting timber in underground situations. He said that the matter of prime cost of timbering, and particularly of its maintenance, often becomes serious, and various devices have been put forward with the object of obviating the difficulty. The effect of the atmosphere may be very considerable in some situations, heaviness and a great degree of warmth being exceedingly prejudicial to the preservation of timber. Dry rot cannot always be detected on the surface. The timber, therefore, requires to be scooped or tested by a hammer, and it is very important that this test should be occasionally employed, and any affected part removed at once. When decomposition of mineral substances is going on in the neighbourhood, the timber should be protected by much greater exposure to air currents than would be necessary in ordinary circumstances. A constant supply of fresh air and water, the latter being allowed to trickle down the timber, will preserve its full strength for a long time. In some situations, pipes with small holes, or rose jets, are arranged so as to discharge a stream of water upon the timber, and this has been found to answer well. Anything is better than allowing the timber to become alternately wet and dry, or cold and hot. Considerable attempts have been made to preserve timber by chemical means, but, where timbering was of a temporary character, the advantages derived would not counterbalance the expenses.

The Surveyors' and Auctioneers' Clerks' Provident Association.—The annual general meeting of the members of this Association was held on Saturday last, at the Auction Mart, Tokenhouse-yard, Mr. D. Watney, the President, being in the chair. The report and statement of accounts for the past year were received and adopted, and the officers re-elected for the current year. In order to extend the usefulness of the benevolent fund, an addition was made to the rules so as to enable relief being granted, under exceptional circumstances, to clerks in distress, not being members, and to their widows and orphans. The accounts show that the Association is in a good financial position, there being a fund of 1,500*l.* invested in Consols. It is earnestly hoped that the assistants in the joint professions will show a much greater interest than heretofore in the success of the Association by becoming members, and thus avail themselves of the benefits provided solely for them. The secretary is Mr. L. Edmenson, 10, Waterloo-place, Pall-mall, S.W.

Perry & Co., Limited, Birmingham.—The dividend recommended by the directors in their report, to be presented at the annual meeting on Tuesday next, is 10 per cent. for the year, the same as that paid for the last two years. £3,000 is placed to reserve fund, being the same amount as for the preceding year.

The Sanitation of Dwellings.—This subject was considered, in connexion with the fifth annual report of the Sanitary Assurance Association, at a meeting of the members at No. 9, Conduit-street, on Tuesday evening. The chair was occupied by Captain Douglas Galton. Mr. Brudenell Carter, F.R.C.S., moved a resolution declaring that measures for improving the sanitary condition of dwellings should receive continued support. Dr. Farquharson, in seconding the motion, alluded to legislation on this subject, and expressed the opinion that compulsion should not be lost sight of in any future steps that might be taken. It would be far better, he thought, if instead of having, as under the present Act, to go to a court of law, which was a very expensive process, and in which one might not be successful, there was a clear-cut, drastic provision introduced, by which those who sold or let houses should have them in a proper sanitary condition, or if they were in default, that a cheap and efficient remedy should be open to the victim for any danger or expense he might thereby have been put to.

PRICES CURRENT OF MATERIALS.

	£. s. d.	£. s. d.
TIMBER.		
Greenheart, B.G. .....ton	6 10 0	7 10 0
Teak, E.I. .....load	12 10 0	15 10 0
Sequoia, U.S. .....ft. cube	0 2 4	0 2 6
Ash, Canada .....load	3 0 0	4 10 0
Birch „	3 0 0	4 10 0
Elm „	3 10 0	4 15 0
Fir, Dantsic, &c.	1 10 0	4 10 0
Oak „	3 0 0	5 0 0
Canada	5 10 0	6 10 0
Pine, Canada red	3 0 0	4 0 0
„ yellow	3 0 0	5 0 0
Lath, Dantsic .....fathom	3 10 0	5 0 0
St. Petersburg	4 0 0	6 0 0
Wainscot, Riga.....log	2 15 0	4 10 0
„ Odessa, crown	3 12 6	3 15 0
Deals, Finland, 2nd and 1st...std. 100	7 10 0	8 10 0
„ 4th and 3rd	6 0 0	7 10 0
Riga	6 0 0	8 0 0
St. Petersburg, 1st yel.	9 0 0	14 0 0
„ 2nd „	7 0 0	8 15 0
„ white	7 0 0	10 0 0
Swedish.....	6 0 0	15 0 0
White Sea	7 0 0	17 10 0
Canada, Pine 1st	17 0 0	30 0 0
„ 2nd	12 0 0	17 0 0
„ 3rd, &c.	6 0 0	10 0 0
„ Spruce 1st	8 0 0	11 0 0
„ 3rd and 2nd	5 0 0	7 10 0
New Brunswick, &c.....	5 0 0	7 0 0
Battens, all kinds	4 0 0	12 0 0
Flooring Boards, sq. 1 in.—Prepared, first	0 9 0	0 13 0
Second	0 7 6	0 8 6
Other qualities	0 5 0	0 7 0
Cedar, Cuba.....foot	0 0 3½	0 0 4
Honduras, &c.	0 0 3	0 0 4
Australian	0 0 2½	0 0 3
Mahogany, Cuba	0 0 5	0 0 7½
St. Domingo, cargo av.....	0 0 5	0 0 7½
Mexican „	0 0 3½	0 0 4½
Tobasco cargo av.	0 0 4	0 0 6½
Honduras cargo av.	0 0 4½	0 0 6½
Maple, Bird'seye	0 0 7	0 0 9
Rose, Rio .....ton	7 0 0	18 0 0
Bahia.....	8 0 0	14 0 0
Box, Turkey	5 0 0	18 0 0
Satin, St. Domingo .....ft.	0 0 0	0 0 0
Porto Rico	0 0 0	0 0 0
Walnut, Italian	1 19 7	0 0 5
METALS.		
Iron—Pig in Scotland .....ton	1 19 7	0 0 0
Bar, Welsh, in London.....	4 15 0	5 0 0
„ „ in Wales	4 7 6	4 10 0
„ Staffordshire, London	5 15 0	7 0 0
Sheets, single, in London.....	7 10 0	9 0 0
Hoops „	6 5 0	7 5 0
Nail-rods „	5 15 0	7 0 0
Copper—		
British, cks. and ingt. .....ton	42 0 0	44 0 0
Best selected	44 0 0	45 0 0
Sheets, strong.....	50 0 0	0 0 0
„ India	48 0 0	48 10 0
Australian, fine cash.....	0 0 0	0 0 0
Chili, bars „	39 15 0	40 5 0
Yellow Metal.....lb.	0 0 4½	0 0 4½
Lead—Pig, Spanish	12 15 0	0 0 0
English, com. brands	13 0 0	0 0 0
Sheet, English	14 0 0	14 2 6
Spelter—		
Silesian, special .....ton	15 2 6	15 5 0
Ordinary brands	14 17 6	15 0 0
Tin—		
Banca	0 0 0	0 0 0
Billiton	0 0 0	0 0 0
Straits	92 5 0	92 15 0
Australian	92 7 6	93 12 6
English ingots.....	97 0 0	0 0 0
Zinc—		
English sheet .....ton	17 0 0	17 15 0
OILS.		
Linseed .....ton	20 0 0	20 7 6
Cocoanut, Cochin	29 0 0	30 0 0
Ceylon	26 0 0	0 0 0
Copra.....	13 5 0	15 0 0
Palm, Lagos	28 0 0	29 0 0
Palm-nut Kernel	24 0 0	0 0 0
Rapeseed, English pale.....	23 0 0	23 10 0
„ brown	21 5 0	21 10 0
Cottonseed, refined	17 10 0	19 0 0
Tallow and Oleine	25 0 0	40 0 0
Lubricating, U.S.	6 0 0	10 0 0
„ Refined	10 0 0	13 0 0
Turpentine—		
American, in cks. .....cwt.	1 8 3	1 8 6
Tar—Stockholm .....brl.	0 19 0	0 19 6
Archangel.....	0 12 0	0 12 6

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Town Hall, &c.	Merthyr Tydfil Lcl. Bd.	52*l.* 10s.	April 20th	i.
Municipal Buildings	Sunderland Corporation	Not stated	Not stated	i.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Flints	West Ham Local Brd.	Lewis Angell	Feb. 23rd	ii.
Paving Works	do.	do.	do.	ii.
Repairing Road	Met. Board of Works	*Official*	do.	ii.
Drainage of Highbury Fields, &c.	do.	do.	do.	ii.
Materials and Works	Willesden Local Board	O. Claude Robson	do.	ii.
Street Watering	Strand Board of Works	*Official*	Feb. 24th	ii.
Additional Buildings to Workhouse	West Ham Union	do.	do.	ii.
Road-making, Tar-paving, &c.	Kensington and Chelsea School District	A. & C. Harston	Feb. 25th	xiii.
Works and Materials	Surbiton Imp. Com.	*Official*	Feb. 27th	xxvii.
Tar Paving	W. Worthing Imp. Com.	do.	do.	xxvii.
Erection of Six Houses, Harrow	.....	.....	Feb. 28th	xxvii.
Wood Pavement	Vestry of St. George's, Hanover-square	G. Livingstone	March 1st	xiii.
Sewerage Works	Chelmsford R.S.A.	Baldwin Latham	do.	xiii.
Town Paving	East Grinstead Lcl. Bd.	*Official*	do.	xiii.
New Streets Works	Vestry of Chelsea	G. R. Strachan	March 2nd	xxvii.
Additions to Public Baths	Croydon Town Council	*Official*	do.	xiii.
Re-paving Street	New Windsor U. S. A.	do.	do.	xiii.
Sewering, &c.	Chiswick Local Board	A. Ramsden	March 3rd	xiii.
Works and Stores	do.	do.	do.	xiii.
Sewerage Works, Street Cleansing, &c.	Westminstr Bd. of Wks	G. R. W. Wheeler	do.	xiii.
Wood Paving	do.	do.	do.	xiii.
Works and Materials	Lambeth Vestry	H. McIntosh	March 4th	xiii.
Making-up Roads	Dartford Local Board	*Official*	do.	xiii.
Concrete Footways	Gt. Yarmouth U. S. A.	J. W. Cockrill	March 5th	ii.
New Police-Station, North Fulham	Met. Police District	*Official*	March 6th	ii.
Works, Repairs, and Supply of Materials	War Department	do.	March 8th	ii.
Stoneware Sewer-Pipes and Gully Traps	Bath U. S. A.	C. R. Fortune	do.	ii.
Works and Materials	Hendon Local Board	*Official*	do.	xiii.
Collection of House Refuse	West Ham Local Brd.	— Horn	March 9th	ii.
Works and Materials	Lewisham Board of Wks	*Official*	do.	ii.
Triennial Contracts	War Department	do.	March 10th	ii.
Water Supply Works	Atherstone R. S. A.	Baldwin Latham	do.	xiii.
Works, Materials, &c.	Vestry of St. Mary Abbotts, Kensington	*Official*	March 15th	xiii.
Granite Road Pavement, &c.	Holme Cultram L. Bd.	R. Stubbs	do.	ii.
Waterworks	Rotherham Corporation	Jas. Mansergh	March 24th	xiii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
District Road Surveyor	Liverpool Corporation	160*l.*	Feb. 24th	xvi.
Surveyor and Assistant Surveyor	Fulham Vestry	300*l.* and 100*l.*	Feb. 25th	xvi.
Clerk of the Works	Croydon Union	2*l.* 10s. per week	March 1st	xvi.
Surveyor and Inspector of Nuisances	Shepton Mallet Lcl. Bd.	100*l.*	do.	xvi.

TENDERS.

BETHNAL-GREEN.—For sanitary works at Bethnal House Lunatic Asylum. Messrs. Tolley & Son, architects:—

Falkner	£1,062 0 0
Marriage (accepted)	785 0 0

CARSHALTON (Surrey).—For building house for Mr. John Kirk. Mr. Thos. Lockwood Heward, architect:—

Nightingale	£3,821 0 0
Deacon	3,498 0 0
Smith & Sons	3,496 0 0
Maides & Harper	3,435 0 0
Greenwood	3,428 0 0
Stewart	3,350 0 0
Potter	3,345 0 0
Howe & White	3,300 0 0
Pack Bros.	3,120 0 0
Clark	3,042 0 0
Marriage	2,945 0 0

CLAPHAM JUNCTION.—For stabling and workrooms at Clapham Junction, for Messrs. Arding & Hobbs. Messrs. Tolley & Son, architects:—

Marriage (accepted)	£1,023 10 0

COLCHESTER.—For building house, conservatory, stables, and boundary-wall, for Mr. H. Leaning, Colchester. Mr. J. Leaning, Poultry, architect:—

F. Dupont	£4,950 0 0
Bowls	4,671 0 0
*Good	4,667 0 0
Eade	4,578 0 0
*Hook	4,545 0 0
A. Diss	4,531 0 0
Dobson	4,189 0 0
Everett & Son	4,175 0 0
A. Chambers	3,897 8 0
C. H. Oldridge	3,841 0 0

All of Colchester except those marked, * who are of London.

COLCHESTER.—For alterations and fitting up of new bar, at the High-street Wine and Spirit Vaults. Mr. J. W. Start, architect:—

Samuel Start	£153 15 0
A. Chambers	150 10 0
F. Dupont (accepted)	147 0 0
Painter's and Plumber's Work.	
W. Rogers	£41 13 0
C. Mills & Son (accepted)	40 1 0

CROYDON.—For alterations to house, "Clydesdale," Park-hill-road, Croydon, Surrey, for Mr. R. Haddock. Mr. R. W. Price, architect:—

Smith & Sons	£297 0 0
Taylor	220 0 0
Marriage (accepted)	218 0 0

DARENTH (Kent).—For the extension of the School and Asylum for Imbeciles at Darenth, near Dartford, Kent, for the Managers of the Metropolitan Asylum District. Messrs. A. & C. Harston, architects, Leadenhall-street. Quantities supplied:—

Wall Bros.	£78,343 0 0
Horsman & Co.	71,919 18 9
Balsam Bros.	70,700 0 0
Martin, Wells, & Co.	67,000 0 0
Paramor & Son	66,900 0 0
Thos. Turner	65,000 0 0
W. E. Kelleway	63,980 0 0
Bell & Son	62,900 0 0
M. Gentry	62,500 0 0
Wallis & Clements	62,484 0 0
Killby & Gayford	62,320 0 0
S. J. Jerrard	62,300 0 0
Wm. Johnson	62,000 0 0
Wm. Shurmur, Lower Clapton*	61,290 0 0
J. H. Johnson (withdrawn)	60,758 0 0

* Accepted.

DORKING.—For construction of outfall and sewage disposal works, for the Local Board. Messrs. Smith & Austin, engineers, Hertford and Westminster:—

Contract No. 2.—Drainage and Filtration Works.	
J. W. & J. Neave	£3,325 0 0
L. Bottoms	2,958 0 0
J. Harrison	2,606 5 0
Wm. Nicholls	2,563 18 6
Peill & Sons	2,533 17 5
Mark Putney	2,510 0 0
John Mackey	2,422 8 0
J. Edwardson	2,296 14 6
C. Killingback	2,293 6 9
Wm. Cunliffe, Barking (accepted)	1,910 10 0
Contract No. 3.—Tanks and Buildings.	
Peill & Sons	£4,224 13 6
J. W. & J. Neave	4,113 0 0
J. Harrison	3,915 9 10
J. Mackey	3,853 17 0
Mark Putney	3,794 16 0
L. Bottoms	3,769 0 0
C. Killingback	3,431 16 6
Wm. Nicholls	3,310 6 6
J. Edmondson	3,288 3 0
Wm. Cunliffe (recommended for acceptance)	3,261 0 0

DUNSTABLE.—For the erection of the Dunstable Grammar School, for the Trustees of Ashton's Charity. Mr. E. R. Robson, F.S.A., architect:—

Yirrell & Edwards, Leighton Buzzard	£13,930 0 0
Smart Bros., Luton	12,959 7 0
Paramor & Son, Margate	12,900 0 0
Higgs & Hill, South Lambeth-road	12,796 0 0
Wall Bros., Carlton-road	12,717 0 0
F. F. White, Dunstable	12,700 0 0
S. Foster, Bedford	12,573 0 0
A. Bunting, St. Ives	12,308 0 0
D. Dunham & Son, Luton	12,290 0 0
F. & J. Wood, Mile End-road	12,232 0 0
F. H. Kingerlee, Oxford	11,895 0 0
W. Tongue, Plumstead	11,800 0 0
J. Smith & Son, South Norwood	11,667 0 0
Stimpson, Brompton-road	11,580 0 0
Oldrey, Westbourne Park	11,500 0 0
C. Misken, St. Albans	11,488 0 0
S. J. Jerrard, Lewisham	10,949 0 0

HORNSEY.—For new mortuary buildings at Hornsey, for the Hornsey Local Board. Mr. T. de Courcy Meade, engineer and surveyor:—

Brown & Sweetland, New Southgate	£2,300 0 0
Dixon, Highgate	2,164 0 0
Paine, Bros., Stamford-hill	2,141 0 0
Hicks, Peterborough	2,041 0 0
Tozer, Notting-hill	2,036 0 0
Kerry & Son, Highgate	1,997 0 0
Dunmore, Crouch-end	1,997 0 0
Hack, Poplar	1,994 0 0
Moreland & Co., Hornsey	1,977 0 0
Norris & Luke, Holloway	1,925 0 0
Roberts, South Norwood	1,900 0 0
Hart, Tottenham	1,895 0 0
Stimpson, Brompton	1,873 0 0
Howell & Son, Lambeth	1,840 0 0
Nightingale, Lambeth	1,830 0 0
Tongue, Plumstead	1,800 0 0
Balsam Bros., Old Kent-road	1,800 0 0
Croaker, Great Dover-street	1,776 0 0
Toms, Camden-town	1,743 0 0
Martin, Willesden-green	1,685 0 0
Stephenson, Bishopsgate	1,661 0 0
Pack Bros., Brixton	1,632 0 0
J. O. Richardson, Albert Works, Peckham (accepted conditionally)	1,628 0 0

HORNSEY.—For new shop-front and repairs at 46, Stroud Green-road, for Mr. Wm. Earl. Mr. Wm. Smith, architect:—

Larke	£194 0 0
Mattock	180 0 0
Ward & Lamble	163 0 0
Clarke Bros.	154 0 0
Langham (accepted)	149 0 0

HULL.—For converting the central portion of Hull Royal Infirmary into an administration department, altering and enlarging the south-west wing for medical wards, erecting tanks and mains for Porter-Clark's water-softening apparatus, and reconstructing the drainage of the establishment. Messrs. H. Saxon Snell & Son, architects, London:—

Mark Harper	£6,310 0 0
Thos. Southern's Executors	6,235 0 0
Jackson & Son (accepted)	6,040 0 0

ISLINGTON.—For alterations and repairs at 103, Upper-street, Islington, for Mr. S. Wood. Mr. William Smith, architect:—

Larke & Son	£318 0 0
Mattock Bros.	293 0 0
Valler	287 0 0
Clarke Bros.	280 0 0
Castle Bros.	277 0 0
Ward & Lamble	270 0 0
Langham (accepted)	255 0 0

KENLEY (Surrey).—For additions to house, new billiard-room, &c., for Mr. C. J. S. Joyce. Messrs. C. & F. Rutley, architects:—

Bowyer Bros.	£1,096 0 0
Hunter & Bryant	993 0 0
Ward	951 0 0
Marriage (accepted)	898 0 0

[Architect's estimate, 800*l.*]

LAMBETH.—For alterations to the Crown publichouse, High-street, Lambeth, for Mr. A. White. Mr. H. I. Newton, architect, Queen Anne's-gate:—

Lapthorne, Lambeth	£868 0 0
Beasley, Westminster	590 0 0
Rutter, Camberwell	575 0 0
Cook, Kennington	547 0 0
Lamble, Kentish Town	539 0 0
Spencer & Co., Bermondsey	485 0 0
Burman & Sons, Kennington	475 0 0
Beal, Westminster (accepted)	450 0 0

LONDON.—For the erection of residences, Cork-street, Piccadilly. Mr. Geo. Wyatt, architect:—

Perry & Co. (accepted)	£14,500 0 0

LONDON.—For the erection of a block of offices adjoining the New Synagogue, Leadenhall-street. Messrs. N. S. Joseph & Smithem, architects:—

Ashby Bros.	£1,967 0 0
Killby & Gayford	1,830 0 0
G. S. Williams & Son	1,616 0 0
J. T. Chappell	1,539 0 0

LONDON.—For alterations, &c., at the Marquis of Anglesea public-house, Lisson-grove. Mr. R. A. Lewcock, architect:—

Walker	£430 0 0
Roome	383 0 0
J. Anley	382 0 0
S. Pringle	370 0 0
W. Shurmur	366 0 0
R. Marr	359 0 0
Jackson & Todd	347 0 0

LONDON.—For alterations to the premises, 114 (formerly 100), Stoke Newington-road. Mr. R. A. Lewcock, architect, Bishopsgate-street Within:—

Pringle	£451 0 0
Shurmur	438 0 0
Battley	437 0 0
Goodall	415 0 0
Jackson & Todd	410 0 0

LONDON.—For alterations to The Jolly Butchers publichouse, Old-street, St. Luke's. Mr. R. A. Lewcock, architect, Bishopsgate-street:—

Ivory	£1,074	0	0
Pringle	1,050	0	0
Steel	1,012	0	0
Shurmur	981	0	0
Anley	948	0	0
Man	895	0	0
Jackson & Todd	889	0	0
Walker	834	0	0

LONDON.—For alterations to the Cambrian Stores, Castle-street, Leicester-square. Messrs. Williams & Son, architects:—

Jeffries	£345	0	0
W. Shurmur	340	0	0
Jackson & Todd	297	0	0
R. Marr	277	0	0

LONDON.—For alterations, &c., at the Duke of Clarence public house, Seawell-street, Hackney-road. Mr. Edward Brown, architect:—

Metcalf	£615	0	0
Lovell	585	0	0
R. Marr	487	0	0
Hawkings	458	0	0
W. Shurmur	456	0	0
Palmer & Co.	420	0	0
Salt	419	0	0

MILE-END.—For covered sheds, &c., at the Peacock public-house, Cambridge-road. Messrs. Williams & Son, architects:—

Hearle & Son	£119	0	0
W. Shurmur	117	0	0
Jackson & Todd	95	0	0

NETHER COMPTON (near Sherborne).—For Ham Hill stone required in the alterations, &c., at Nether Compton Church, near Sherborne:—

Charles Trask & Sons	£159	0	0
S. & J. Staple	105	0	0
John Trask & Co.	102	10	0
John Hann & Son (accepted)	90	0	0

NORWOOD (Surrey).—For new almshouses for the College Wardens of St. Saviour's, Southwark, and Edward Alleyn's Trust. Mr. C. N. M'Intyre Worth, architect. Quantities by Messrs. Franklin & Andrews:—

Hermon	£2,719	0	0
Colls & Son	2,696	0	0
Garnham	2,675	0	0
Sheppard	2,662	0	0
Downs	2,656	0	0
Stone	2,550	0	0
Marriage (accepted)	2,495	0	0

PADDINGTON.—For erection of eleven houses in the Uxbridge-road, for Mr. Statham Hobson. Mr. R. E. Tyler, architect. Quantities by Mr. Walter Barnett:—

Mowlem & Co.	£11,966	0	0
M. Gentry	10,675	0	0
J. R. Lacey	10,353	0	0
Gould & Brand	10,247	0	0
W. Shurmur	10,212	0	0
T. Rider & Son	10,190	0	0
J. Brown, Son, & Blomfield	10,100	0	0
Patman & Fotheringham	10,087	0	0
W. Brass & Son	9,983	0	0
G. Phillips	9,900	0	0
Lawrence & Son	9,723	0	0
Stimpson & Co.	9,380	0	0
J. Mortar	9,286	0	0
J. Grover & Son	9,093	0	0
R. Lyford	8,800	0	0

SWANWICK (near Alfreton).—For construction of two main outfall pipe sewers at Swanwick, near Alfreton, and also for works necessary in the preparation of certain land for sewage irrigation purposes, for the Belper Rural Sanitary Authority. Mr. W. H. Radford, Assoc. M. Inst. C.E., engineer, Nottingham:—

Samuel Thumbs	£2,250	0	0
Thomas Smart	2,140	0	0
Meats Bros.	2,100	0	0
Foster & Barry	2,020	0	0
Charles Green	1,829	0	0
John Roe	1,777	11	8
John Hawley	1,774	0	0
Geo. F. Todd	1,757	0	0
Beardsley & Pounder	1,716	0	0
John Coupe	1,644	10	6
Shortland, Williams, & Co.	1,644	18	0
W. E. Hopkins	1,547	0	0
W. Cordon	1,530	12	0
R. & J. Holmes & Co., Shirland, near Alfreton (accepted)	1,230	0	0

STAINES.—For alterations to Fairfield House, Staines, for Dr. De la Motte. Mr. Ralph Pitt, architect, Staines: Baker, Staines (accepted) £246 0 0

STRATFORD.—For the erection of 372, High-street, Stratford, for Mr. W. Willis. Messrs. J. & J. S. Edmeston, architects, Old Broad-street:—

Monday	£800	0	0
Kynoch & Co.	740	0	0
Smith & Sons	725	0	0
Redman	625	0	0
Steel Bros.	595	0	0
Reed	588	0	0

WHITECHAPEL.—For concrete foundations and brickwork of basement story for a block of model dwellings in Flower and Dean-street, for the Four Per Cent. Industrial Dwellings Co. (Limited). Messrs. N. S. Joseph & Smithem, architects:—

Kilby & Gayford	£3,397	0	0
G. S. Williams & Son	3,127	0	0
J. T. Chappell	2,975	0	0
E. Conder	2,898	0	0
N. Fortescue	2,754	0	0
W. Shepherd	2,730	0	0
Outhwaite & Son	2,683	0	0
Ashby Bros.	2,660	0	0
Mark Gentry (accepted)	2,620	0	0

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